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General Article

THE ASSOCIATION BETWEEN GASTRO - INTESTINAL HELMINTHS AND DISEASE IN RUMINANTS*

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As a respite from the usual kind of paper which gives a brief survey of the general appearance and life history of the helminth inhabitants of the various organs of domestic animals, it is proposed here to discuss the clinical side of the subject, the association between the parasitic worms and disease in the living animal.

As veterinarians, this is our particular concern and our interest in the denizens of the alimentary tract, whether bacterial, protozoan or metazoan, is only a passing one unless there is some association with disease. The parasitic worms of farm animals occupy much the same position as coccidia in the matter of pathogenicity, in that both are of very frequent occurrence, usually unassociated with disease but occasionally producing sporadic disease or even widespread epidemics. Although the idea is rather foreign to most of us there seems to be no valid reason why even such gross parasites as helminths should not be regarded as normal inhabitants of the alimentary tract, in much the same way as are the flagellates in the rumen of the ox or sheep or in the large intestine of the horse.

The matter that I wish to discuss this afternoon is indicated by the following three questions which I shall try to answer: (1) What species of the gastro-intestinal worms of ruminants are particularly concerned with disease causation? (2) How do they cause disease? And (3) What are the factors which decide that they shall do so?

(1) What Species of the Gastro-Intestinal Worms of Ruminants are Particularly Concerned with Disease Causation?

The only helminthic disease of the alimentary tract of ruminants in this country which has received a special name and which may be regarded as a specific entity is parasitic gastritis, or parasitic gastro-enteritis. Of the several species of worms which commonly occur in sheep in this country in other parts of the alimentary tract none is associated with specific disease, and such words as " monieziasis " or " chabertiosis " mean nothing more than an infection with the relative worms.

It will, therefore, be necessary to make only a passing mention of the species other than those connected with parasitic gastritis, after which we can return to the consideration of that disease.

The various species of the cestode genus *Moniezia* might be mentioned first. Many species have been described but most of the specific descriptions have been based on individual variation, and it is probable that only two species are actually represented, *M. expansa* and *M. benedeni* (better known by the synonym *M. planissima*). Different authors have associated various symptoms of disease with their presence and it is difficult to find out from the literature what harm they are capable of causing; but anyone who likes to visit a large abattoir in this country during the months of June and July may easily collect a bucketful of these worms from fat lambs, many of which may be quite heavily infected, and so convince himself that any disease which they may cause must be accidental, through obstruction of the gut, or something of that nature, and that there is no *essential* connection between their presence and disease.

Living also in the small intestine are the hookworms, *Bunostomum phlebotomum* in cattle and *B. trigonocephalum* in sheep. These worms injure the mucous lining of the intestine by biting the walls and have been associated with symptoms of severe disease in parts of Africa and America where they sometimes occur in large numbers. A most interesting point about this parasite is that, although it is so widely distributed throughout the country, three-quarters of the sheep probably being infected, it rarely occurs in large numbers and does not appear to cause disease. The crowded conditions of sheep farming in the British Isles might have been expected to result in disease production by this species in the same way that it has with the small trichostrongylid worms in the fourth stomach, but some factors of soil or climate appear to be operating here which prevent that from happening.

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In the large intestine are commonly found *Trichuris ovis* and *Chabertia ovina*. *T. ovis* occurs in the cæcum and is one of the commonest of sheep parasites throughout the world. Its presence even in comparatively large numbers appears to cause no inconvenience, and it is tolerably certain that if it ever causes disease at all it is only very rarely, in isolated animals, nothing in the nature of an outbreak in a flock having been recorded.

Until quite recently *C. ovina* has also been thought a comparatively harmless parasite, although one or two authors have associated a debilitated condition of sheep with heavy infestation of this worm. Some observations carried out in Australia in which the effect of heavy doses of the infective larvæ of *C. ovina* was observed in experimental sheep suggest, however, that this worm may be more pathogenic than had previously been thought, severe diarrhœa occurring about four weeks after the administration of the larvæ, and persisting, along with the passage of blood and mucus, for from four to eight weeks.

It is possible that the symptoms which were thus experimentally produced were not those of any disease which occurs naturally, but there is a strong suggestion that this parasite can be harmful and the requirement for further investigation of this kind is clearly indicated.

Parasitic Gastritis.

Several species of nematode, all of which belong to the sub-family Trichostrongylinæ, have been loosely associated with this disease. Some are found more particularly in the small intestine; those occurring in the fourth stomach bear the following names and common synonyms: *Hæmonchus contortus* (*Strongylus contortus*), *Ostertagia circumcincta* (*Strongylus cervicornis*), *O. trifurcata*, *O. ostertagi* (*Strongylus ostertagi*), *Trichostrongylus axei* (*T. extenuatus*, *Strongylus gracilis*). Those commonly found in the first part of the small intestine are as follows: *Trichostrongylus vitrinus*, *T. colubriformis*, *Nematodirus filicollis* (*Strongylus filicollis*), *Cooperia curticei* (*Strongylus ventricosus*), *C. oncophora* (*Strongylus ventricosus*) and *Strongyloides papillosus*.

As two or more species are usually to be found in fairly large numbers both in the fourth stomach and in the first part of the small intestine it is not an easy matter to decide which ones are responsible for disease. At times, however, disease is observed where one species is present in numbers greatly exceeding any other, and we know as a result of such observations that *H. contortus* and species of *Ostertagia* are particularly pathogenic. *O. circumcincta* is particularly associated with disease in sheep, and *O. Ostertagi* in cattle. *Trichostrongylus axei*, when present in very large numbers, also appears to become definitely pathogenic, producing a chronic form of the disease which may run a course of four or five months before the animal either dies or makes a recovery. *Cooperia* rarely occurs in very great numbers, and *Nematodirus* may be present in large numbers without causing any symptoms of disease, Kauzal recently having observed as many as 32,000 in healthy Australian lambs which had been sent to the butcher.

(2) How do these Worms cause Disease?

Having answered the first question as well as we can, and singled out *H. contortus*, *O. circumcincta* and *T. axei* as the principal pathogens, let us see what is known of the way in which disease is produced.

Various theories have been held on the explanation of disease production by these minute worms in the fourth stomach. It is evident that they require to be there in very large numbers to cause an obvious disturbance to health, but how they do it is still very uncertain, with the exception of *Hæmonchus contortus* about which we have recently acquired some interesting information.

A South African hæmatologist made a comparative study of the anæmia of hæmonchosis and the anæmia which he produced by frequent bleedings from the jugular vein of uninfected sheep, as a result of which he came to the conclusion that the two were identical and that the anæmia of hæmonchosis might be explained solely by the withdrawal of blood by the worms. Other workers in Australia have come to the same conclusion (based upon the amount of phosphorus found to be present in the eggs of the worms, and originating from the blood of the sheep) and the number of eggs passed in the fæces.

At about the same time direct observations on living hookworms *in situ* in the dog's intestine and a study of the anæmia of hookworm disease had led American workers to the same conclusion on the causation of the anæmia of hookworm disease, and it is clear that actual loss of blood must be regarded as the principal way in which these blood-sucking worms cause disease.

Of the way in which the other species cause disease we know very little: they appear to withdraw a certain amount of blood, as hæmoglobin can be demonstrated in a maceration of the worms in water. Other considerations, however, make it appear unlikely that this is the chief way in which they cause disease, and we are left to suppose that they either produce some poisonous substance which is absorbed into the system, or that they interfere to a marked degree with the digestive functions of the fourth stomach although, as yet, no one has clearly demonstrated either of these pathogenic actions.

With reference to the causation of anæmia by the withdrawal of blood by the worms, it is interesting to note that several investigators have recently reported on the very definite benefit to be derived from iron therapy in human hookworm disease; even apart from anthelmintic treatment it has been observed to result in a decided amelioration of the patient's condition, and in one or two instances where comparisons have been made between the results of expulsion of the worms on the one hand and the results of iron therapy on the other, it has been shown that iron therapy has given much the better results. This observation is worthy of our consideration, and along with the administration of anthelmintics this line of treatment might be well worth trying in hæmonchosis in sheep and cattle, and also in strongylosis of equines.

(3) What are the Factors which Decide that the Worms shall cause Disease at One Time but not at Another?

The worms which have just been discussed are all prevalent throughout this country; so much so, that although individual sheep and cattle may be found entirely free from infection, there is no flock or herd which does not harbour some of the very worms that are capable of causing parasitic gastritis. The health of the animals is not affected in any way, however, unless the worms are present in very large numbers, ranging from 4,000 or 5,000 up to 140,000. It is clear, therefore, that the factors which lead up to disease are those which bring about the presence of worms in the stomach in unnaturally large numbers, and it is those factors that we ought to know something about. They may be discussed in two sections, those which concern the free-living stages of the parasites and their relationship to external environment on the one hand, and those affecting the parasitic stages and their relationship to the host on the other.

Infection is disseminated in the form of eggs, and before it is able to take place those eggs must hatch and the larvæ pass through two separate stages of development on the ground. They then migrate upwards and many find their way on to the herbage where they lie in wait for the grazing animal to take them up. This free-living cycle of development cannot take place in less than five or six days even under the most favourable weather conditions, and in cold weather takes much longer.

Most of the infective larvæ in a pasture take up their abode near to the ground, the structure of the blade and sheath of the grass being such that most of them are turned off from the stem to the underside of the lowermost leaf. They are able to migrate upwards through soil, so that a second green crop on arable land may be heavily infested with larvæ if the previous crop has been eaten off by sheep. The loose surface of ploughed land affords good protection and infestation probably survives more effectively on arable than on old pasture land. The longevity of the infective larvæ on the ground, and the still greater powers of resistance of the eggs of some species when at the stage in which they are just ready to hatch, is also an important point in the consideration of disease production.

But let us turn to the operation of these factors for the production of disease. The situation of the larvæ close to the ground is intimately concerned with the association between dry weather and parasitic gastritis, as not only do the grazing animals pick up more larvæ because they have to bite nearer to the ground, but in order to satisfy their food requirements they need to graze more diligently and so collect more larvæ from a greater area of the field.

There is an interesting association between pasture improvement by basic slag and the appearance of parasitic gastritis. Observations by farmers and agriculturalists in general leave no doubt as to there being some connection between these two, and increase of worms through increase of sheep population seems, at first, to be a reasonable explanation. Further enquiry reveals, however, that some other factor is concerned as, in certain instances, although the quality of the grass has been improved beyond all recognition it is found to be incapable of carrying as many sheep with safety as it used to do before the improvement was effected, and the farmers have been driven to grazing a larger proportion of cattle on the pastures. The reasons for this probably concern the habits of the free-living larval stages of the worms and the alteration in the kind of herbage. As a result of the improvement of the pasture the herbage changes from a thick mat of poor quality grass, which is not eaten very closely by the sheep, to a close growth of sweet grasses which the sheep bite very near to the ground, so picking up more larvæ. In addition to this the percentage of clover is greatly increased, and this may also have an adverse influence as there is no structure corresponding to the leaf sheath and blade of grasses to turn the ascending larvæ off the stem; whereas most of the larvæ are to be found under the lowest blades of the grasses, they ascend the clover unimpeded.

These examples may suffice to show the importance of small considerations in the epidemiology of the worm diseases of grazing animals and the ways in which the management of sheep and crops, the moving of sheep and the soil and weather conditions have a direct influence on the cultivation of the larvæ on the ground and their ultimate collection in disease-producing numbers by the sheep.

So much for the factors operating upon the parasites in their free-living stages; now what factors are there concerning the grazing ruminant favourable or unfavourable to the development of disease?

The marked influence of some of these factors is clearly seen where adult animals may remain perfectly healthy grazing the same pastures on which young animals are dying of the disease. Lambs and calves are much more susceptible to the development of these worms than are the adults and always call for special consideration and the most careful protection; where parasite-free pasture or clean ground is limited it should always be reserved for the young stock. The study of immunity is a branch of parasitology which is receiving a large amount of attention at the present time. Both age resistance and acquired resistance appear to be concerned and play an important part in deciding whether sufficient worms will develop in the animals for disease to be produced or not. Helminth parasites cannot give rise to successive generations within the one host and all have to be collected by the grazing animal from its environment; every hindrance which can be put in the way of their development is, therefore, of importance. An existing immunity may be depressed by an unsuitable or an inadequate diet; breed may play some part, and there may be other considerations of which as yet we know nothing, the study of immunity to helminths still being in its early stages. Although no one factor adverse to the increase of parasites may be sufficient in itself to control disease, the sum total of all the factors working against the ultimate increase in the number of worms in the fourth stomach of the susceptible ruminant, may be adequate for its prevention.

The understanding of the systematic position of the parasite may be the key to its life-history and habits, and a knowledge of the life history in some instances may be the key to control, but it is not the whole story. The " life-history " of the disease as one complete story is also wanted by the veterinarian before he has a thorough understanding of its development, and knows when to expect its appearance and what steps to take for its prevention. Although the knowledge of some safe and efficient anthelmintic may detract from the relative importance of this information in some few instances, prevention must still be relied upon in most worm diseases of ruminants, and from a veterinary point of view epidemiology is a most important branch of the knowledge of disease causation by parasitic worms.

Discussion

The discussion was opened by Mr. C. V. Watkins, of the Seale-Hayne College, Newton Abbot, who observed that these cases were usually mixed infestations, and added that he was interested in the distinction made between pathogenic worms and those not yet proved to be pathogenic.

Occasionally there was present at the same time some disease other than that caused by worms, and one wondered if there were some connection.

Recently he found Johne's disease in sheep and in that instance the commonest worm was the hookworm. It was conceivable that the hookworm might increase the liability to spread of the disease.

Mr. R. H. Smythe, Camborne, said that there must be many more factors inhibiting the activity of worms than they realised, for apparently healthy animals might harbour numerous parasites; in fact, samples of fæces from animals in good condition frequently showed more eggs per c.c. than those from emaciated subjects. Some of the influences might be breed, feeding during early life, and the existing circumstances of nutrition and exposure.

It was obvious, also, that worm parasites must encounter numerous obstacles during their life history; otherwise, in view of their prolificacy, they would soon overwhelm their hosts. Was it that only a small number of the eggs hatch out or that the larvæ did not get through the intermediate stage? Was it a soil question or dependent upon the nature of the surrounding herbage, or, again, was there some other factor preying upon or acting injuriously upon the larvæ or eggs?

Had the type of stalk (smooth or rough stems), any effect or could the natural juices of certain grasses inhibit the development of the parasite?

Drying had an influence. In a good pad of fæces, moisture was retained sufficiently to permit of development. In severe diarrhœas the fæcal matter was spread out over a large area, exposed to light and air, and it soon dried, thus limiting infection to others.

He had experienced deaths from lysol but its effect upon the survivors was often spectacular. Iron was useful. Commercial carbonate or sesquioxide of iron usually contained traces of arsenic and a little copper sulphate might be added with advantage. He prescribed these, mixed with commercial glucose, to be given in the food.

Ploughing the land, salting and liming seemed to be useless, but whenever possible, drainage of the land was always worth while. Treatment was of little use whilst the animals were confined on infected ground.

Mr. R. H. Smythe, Falmouth, after expressing his thanks to the essayist for his paper, commented that Mr. Taylor had rather confined it to sheep. He had been under the impression that it was easier to deal with outbreaks in sheep than in cattle. Treatment appeared to be effective in sheep, but not so good in young cattle. On one farm, he saw 20 yearling cattle affected last January and February and 14 died.

The literature on the subject was not very helpful. He agreed that medicines containing iron were useful. For many years they used perchloride of iron and carbonate of iron in large doses, and the cases usually responded. Penberthy recommended lysol in 4 to 6 dram doses, with turpentine and chloroform, and in the case of cattle, if they survived the treatment they usually recovered from the disease. It was advisable to cut down the dose of lysol.

As to infection, the fæces of cattle might show the eggs in considerable numbers and these cases might be mistaken for Johne's disease. It was conceivable that a moderate infection with

worms might be helpful to the host, as in the case of fluke disease. When the infection was too heavy symptoms appeared. Did Mr. Taylor recommend any treatment for tape-worm in sheep?

Mr. E. B. D. Hall (Wiveliscombe) stated that he knew of several farms which escaped parasitic disease last year, but which have been affected this year—also the reverse. Why should that be? Mr. Hall also enquired as to the connection between parasitic infections and fatty degeneration of the liver, and asked, further, was there any explanation as to the cause of age immunity? Was it immunity to a toxin? Johne's disease could be distinguished from parasitic conditions because there was no loss of colour in the hair in the latter condition. What were the *post-mortem* appearances in these cases?

The Reply

Mr. Taylor, in reply to the various speakers, said that most of the discussion had centred around the questions of diagnosis, treatment, the association of parasitic worms with other conditions such as Johne's disease, and the factors which inhibit the increase of worms. As to diagnosis, the history was very important. The outbreak affected the whole flock more or less at once, and young animals were much the more susceptible.

When old and young animals were running together and all were infected, it was only the young animals which showed symptoms unless the rate of infection was extraordinarily high. There was no diagnostic *post-mortem* appearance. Mr. Hall's experience did not agree with his. He thought the degeneration of the liver to which Mr. Hall referred, showed that some other disease was present in those cases and that the conditions were not comparable.

The flotation method could not be relied on as a method of diagnosis. It was better to count the eggs in a given weight of fæces—when, say, 50 to 100 eggs per gm. would represent a light infection, and 10,000 would be a heavy one although as many as 140,000 worms might be found in one sheep. But even this method was not absolutely reliable because, for instance, the immune responses of adult sheep might effect the egg laying rate. The only way to make a definite diagnosis in an adult sheep was to kill the sheep and make a count of the worms, or, failing that, to get a rough idea of the extent of the infestation by washing the wall of the fourth stomach in water and observing the number of worms.

With regard to the co-existence of Johne's disease and hookworms in sheep, possibly the Johne's disease reduced the resistance of the animals.

It had been suggested that animals could be inoculated with bacteria through the medium of parasites. It had been asserted that blackleg could be transmitted in this way, but experiments in this connection had given negative results except in the case of foot-rot in sheep in which the feet of sheep could be inoculated with *B. necrosis* by the larvæ of *Str. papillosus*.

As to treatment, 1 per cent. blue stone would kill *Hæmonchus*, but it had no action on any of the other worms.

Hæmonchus was less often than *Trichostrongylus* a cause of trouble in cattle and that might be the reason for treatment being less successful in cattle.

A mixture of nicotine and copper sulphate would act on trichostrongyles in sheep but he (the speaker) had no records of its use in cattle.

As to the factors which limited the action of worms, it had to be remembered that the hosts and parasites had been living together a long time. It was clear that it was not in the interests of the parasites that they should kill the sheep. When sheep were all wild the state of affairs was that of happy worms in happy sheep, and the infection would not then have been acute. Worm disease in wild animals was rare. Our agricultural system with its over-crowding was responsible for the state of unhappy worms in unhappy sheep. Parasites were not essentially harmful to sheep.

To prevent heavy infestations it was necessary to limit stocking. Among the factors which kept down the number of worms were the immunity of the host, and the chance of eggs developing to infective larvæ on the pasture, and the chances of the infective larvæ being picked up by a sheep.

Clinical Communications

CLINICAL NOTES ON RHODODENDRON POISONING

GEO. HOBSON, M.R.C.V.S.
Buchlyvie, Stirling

Case I: On January 20th, I was called to see a newly-calved cow, suspected of having milk fever, as she was off her feed, staggering and mostly lying down.

On arrival I was shown a Highland cow with black calf at foot, and by reason of the breed of the cow, I was dubious of this being a case of milk fever. On pressure being applied she stood up, but staggered badly. Temperature was normal; fæces were scanty, black in colour and slightly blood stained. Suspecting rhododendron poisoning, I asked the herd if the cow could have had access to this shrub. He appeared doubtful, but said that there were some bushes of it in the adjoining grounds, though none in the field where the cow had been. On inspecting these bushes, it was found that they had grown through the fence and there was evidence that they had been eaten.

Treatment.—One-and-a-half lb. Epsom salts and two lb. treacle in two gallons of tepid water, by stomach tube. It was very difficult to give this, as immediately the cow was held by the head she became very violent and on passing the tube, she regurgitated a lot of greenish matter, amongst which was one leaf of the plant. (On inquiry from the herd if he had noticed this before, he said he had not done so, but that he had observed that she had been making movements as if to "chew the cud," which were evidently attempts at regurgitation.) She was also given vegetable tonics and put on to bran mashes, with a liberal supply of water. Her bowels were acting freely the next day and the following day she was normal in her gait, chew-

ing her cud, and anxious for all her food, and her milk supply had returned.

Case II: On June 20th my services were requested for a dry cow, recently purchased, which the owner said was "off colour." At first I could not see very much wrong with her, as she was eating hay, had been chewing the cud during the day, and had a normal temperature, and on inquiry the owner said her bowels had been acting naturally during the day. When walked out, she appeared normal though she staggered once or twice, which I accounted for as being due to the cement flooring. On being brought to the grass, she ate it readily. However, on the journey she passed fæces which I considered to be rather dark in colour. I decided to give her the dose as in the previous case, but on touching her head she got very violent and the owner said he had noticed this during the day, and thought there was something "stuck in her throat." When the stomach tube was passed she again became violent, fell down and regurgitated freely. It was only then that I suspected poisoning and on inquiry found that some rhododendron branches had been cut and thrown into the field where she had been. She was so difficult to dose that in the end I had to tie her up, and treat her as in the previous case. Recovery was uneventful.

Remarks: As a rule, cattle will not eat rhododendron, except as in cases above: (i) a newly-calved cow will eat at such a time what she would not otherwise; (ii) recently-purchased animals are inclined to eat shrubs which they normally do not eat. The violence shown by the animals on touching their head, is, in my opinion, very symptomatic, as is also the regurgitation. With regard to the treatment, the usual one for such cases is linseed oil, but from previous experience with this agent I found that it was not purgative enough, prognosis was indefinite and results were not too good.

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A NARROW ESCAPE

P. J. HOWARD, m.r.c.v.s.
Ennis, Co. Clare

A six-year-old mare, within seven days of foaling, attempted to get through a narrow wicket gate, and was found next morning in the condition shown in the photographs. She evidently got impaled and ruptured both flanks, but the lower part of the abdomen is intact.

The mare produced a good colt foal at the proper time and is rearing it well.

I just applied a dressing with a strong truss which was kept on for about a fortnight.

Annotation

DISCUSSION ON HÆMOGLOBINURIA*

J. Barcroft stated that the present view of Bowman's capsule was that it acted as a filter and had no secretory properties. Materials having a lower molecular weight than 70,000 passed through the membrane and at this critical level stands hæmoglobin, which in the case of the red corpuscles has a molecular weight of 68,000. Two questions were to be answered: (i) whether all the hæmoglobin found in the red corpuscles is the same; (ii) whether the hæmoglobin found in the kidney is the same as that in the blood corpuscles. Certain experiments have suggested that the blood may contain more than one sort of hæmoglobin, but it is possible that this conclusion was due to artefact arising in the course of experiment. There is more definite evidence that the hæmoglobin of muscle is not the same as the pigment of blood, the former having a lower molecular weight and, therefore, appearing more readily in the urine after liberation in the blood plasma. Hæmoglobinuria is not a disease of the excretory mechanism.

By way of introduction, F. C. Minett set out the various conditions naturally occurring in animals which are characterised by the presence in the urine of red-colouring matter, either hæmoglobin or myoglobin. The list, which was not intended to be exhaustive, was as follows:—

HÆMOGLOBINURIAS

(1) Due to destruction of erythrocytes by parasites or their products, *e.g.*, certain protozoa, bacterial hæmolysins.

(2) Due to lowered resistance of erythrocytes.

(3) Of doubtful or unknown origin, *e.g.*, puerperal hæmoglobinuria of cows, acute enzoötic hæmoglobinuria and jaundice of sheep.

(4) Arising from miscellaneous causes, *e.g.*, certain defined chemical agents, extensive skin burning.

MYOGLOBINURIAS

Arising from "destruction" of voluntary muscle: Paralytic myoglobinuria of horses (so-called "equine hæmoglobinuria"). Enzoötic myoglobinuria of horses (so-called "equine enzoötic hæmoglobinuria"). Myoglobinuria of cattle.

HÆMOGLOBINURIAS

(1) *Due to Destruction of Erythrocytes by Parasites or their Products.*—Protozoa belonging to the family Piroplasmidæ are, of course, the most important, though hæmoglobinuria may also result from the action of hæmolytic bacteria. Two conditions were specially mentioned:—

(*a*) "Bacillary hæmoglobinuria" which has been described in cattle in North and South America, especially in California, and which was formerly confused with anthrax and hæmorrhagic septicæmia. On *post-mortem* examination the most important lesions are necrotic areas arising in the liver and the cause apparently is an organism of the Clostridium group.

(*b*) "Bacterial icterus" of sheep, which has been described in South Africa and in which hæmoglobinuria is an inconstant feature. The disease is said to be due to a Corynebacterium.

(2) *Due to Diminished Resistance of Erythrocytes.*—Observations are few, but one case in a horse was carefully investigated by Bendixen and Carlström (1929). The animal suffered from chronic anæmia and icterus and periodically from hæmoglobinuria which was proved to be due to markedly increased fragility of the red corpuscles. The pigment in the blood plasma and of the urine was oxyhæmoglobin and not myoglobin, and it should be emphasised that the pigment did not appear in the urine unless the plasma was visibly coloured.

(3) *Of Doubtful or Unknown Origin.*—Two conditions were referred to:—

(*a*) "Puerperal hæmoglobinuria" of cows ("post-parturient hæmoglobinuria"). This disease, in which piroplasms play no part, is quite well known in Great Britain and other countries, occurring in cows from one to three weeks after calving, chiefly in heavy milkers and mainly during the winter months. There is acute anæmia, diarrhœa and icterus and the urinary pigment contains blood hæmoglobin and sometimes an excess of acetone. *Post-mortem*, the characteristic change is focal necrosis of the liver, possibly arising through embolism from red cell stroma.

(*b*) "Acute enzoötic hæmoglobinuria and jaundice" of sheep has been reported in South Africa and Australia. The cause is unknown. There is marked anæmia and cases are generally rapidly fatal.

MYOGLOBINURIAS

The pigment in the urine in these cases is muscle pigment—myoglobin, not hæmoglobin.

Paralytic Myoglobinuria of Horses.—Under the name "hæmoglobinuria" this interesting condition is well known to veterinarians. The disease occurs under certain well-defined conditions, namely, in well-nourished regular-working horses, particularly of the heavy type, which for some reason unconnected with illness are

* *Proc. Roy. Soc. Med.* 28. 6. 671-680.

rested for a few days, but are still kept on a working diet containing carbohydrates in abundance. There has been much speculation as to whether the urinary pigment is derived from the blood or from the muscles. M'Fadyean (1888) inclined to the view, previously put forward by Fröhner, that the pigment was derived from the muscles, but a few years later he suggested that the blood was the source, mainly because in the early stages of the attack he found a considerable rise in the erythrocyte count which was said to fall as the illness proceeded. Within recent years the subject has been closely studied in Sweden by Carlström (1930). His observations relate to 50 natural cases and these observations, together with many experimental data, are discussed in a valuable monograph. One of the main conclusions is that the pigment in the urine is myoglobin derived from the damaged muscle. The citrated blood-plasma is usually free from visible pigment. Examination of the blood showed that severe cases are accompanied by a distinct and enduring rise in its lactic acid content; in mild cases the rise in lactic acid is small and temporary. In order to control these findings, the blood of healthy horses was examined. With regard to lactic acid it was found that the amount increases with work, though rather variably; in horses in regular work the rise, however, is unimportant. The increase is greatest very shortly after the work is begun, but the figure has fallen to normal within 45 minutes. The increase tends to be higher in horses which have been resting for some days, especially if they have been fed on a richly carbohydrate diet.

An examination of the muscular tissue in myoglobinuria also revealed a rise in the lactic acid values, this varying from one muscle to another but being especially high and enduring in severe cases. The amount of glycogen in the muscle was also increased, the highest values being found some time after the onset of the attack and in muscles showing the least degree of histological change.

Carlström's explanation of the experimental findings is as follows. In the first place, it is well known that horse-muscle is peculiarly rich in glycogen, and analyses have shown that during the winter and spring months the amount tends to be higher than at other seasons. It is also known that the amount of muscle glycogen can be increased by feeding on sugary foods and that the storage capacity is greatest in those muscles which are mainly called into action during work. In agreement with this, Carlström has shown that in healthy horses which are rested for a few days while on a full diet, and especially on a diet rich in carbohydrate, there is a considerable storage of glycogen in the voluntary muscles. This storage, in accordance with functional requirements, is especially high in those muscles of the hinder parts of the body, *i.e.*, those which are most active during work and which, incidentally, are most inactive during rest. Incidentally also, these muscles contain a relatively high proportion of myoglobin and they are the ones mainly involved in myoglobinuria. When these muscles become suddenly active after a period of rest, there is an excessive production of lactic acid, which leads to damage of the muscle. The concentration of lactic acid is not, however, the sole factor in this, since it is known that very high acid values may be obtained without actual damage in muscles which are simply fatigued. There is considered to be in addition a vascular deficiency, rendered important by the previous resting of the muscles, and consequently there is an oxygen lack, so that the excess lactic acid can neither be removed nor oxidised. This suggests that slow work, which fails to open up quickly the muscle capillaries, may be a more dangerous predisposing factor than very hard work, a suggestion which to some extent falls into line with clinical observation. The damage to the muscle is shown by swelling and necrosis of the fibres, and myoglobin, probably together with other substances, diffuses out of it. Now by injecting muscle juice into animals (rabbit, dog, horse) it has been shown that the threshold value of the kidney for myoglobin is low—much lower apparently than for hæmoglobin. Thus, muscle pigment easily escapes with the urine and may tint this fluid, although the blood-plasma is not appreciably coloured. On the other hand, as pointed out earlier, when the colouring matter of the urine is hæmoglobin, this must have been previously present in the plasma in such amounts as would visibly colour the plasma. The existence of the second factor —a circulatory impediment in the affected muscles—was proved by injecting india ink into the veins of horses which had been showing symptoms and which were killed immediately after the injection. Observations on cases of iliac thrombosis, and experiments in which various suspensions were injected into the blood vascular system, however, led Carlström to believe that circulatory impediment alone could not be responsible for the disease. Finally, any increased red cell volume which might be present is not regarded as an essential factor in causation, because there is no anæmia, and at no stage of the disease did Carlström find hæmoglobin in the urine. Apparently, therefore, any excess of hæmoglobin is disposed of in the natural way, and this explanation is supported by the rise in blood bilirubin seen in severe cases.

Experiments designed to set up the disease in horses gave interesting results, in line with the

above conclusions. Thus, intravenous injections of lactic acid did not lead to symptoms. In five separate experiments no illness could be produced in a horse, well fed on oats and hay, when put to work after a rest period varying from two to four days. When to the diet of this animal were added during the rest period large amounts of sugar-beet, which is of course very rich in carbohydrate, the disease appeared when the animal was put to work after a three-day rest, there being myoglobin in the urine and a rise of lactic acid in the blood. In a control horse of the same type similarly treated, except for the beet-feeding, the disease did not appear, and there was no rise in blood lactic acid.

Enzoötic Myoglobinuria of Horses. — This disease resembles paralytic myoglobinuria in nature and the pigment in the urine is myoglobin, but the circumstances in which it occurs are quite different. The disease is said to occur in small enzoötics and only in horses of the agricultural class, most of those affected being thin and receiving a very poor ration containing little grain. The cause is uncertain, but it has been ascribed to feeding of mouldy fodder and deficiency of vitamins. It has been described as a "degenerative polymyositis," the degeneration being most marked in the most active muscles, namely, the crurals, the masseters, and the tongue and heart muscle.

Myoglobinurias of Cattle.—In young cattle turned out to pasture in the spring there may occur muscular changes similar to those seen in equine myoglobinuria, accompanied by the presence of myoglobin in the urine. Apart from such cases, there has been observed in draught oxen a disease in which red pigment is present in the urine and which occurs in circumstances similar to those of equine myoglobinuria.

Damage of the muscular tissue may occur in lambs and young pigs but, owing to the relatively small amounts of myoglobin in their muscles, these animals do not then show myoglobinuria.

N. J. Scorgie gave details regarding puerperal hæmoglobinuria of bovines, mentioned above.

E. P. Mackie gave an account of the microscopical changes in the kidneys found in hæmolytic anæmia in monkeys, in human blackwater fever and in human incompatible transfusion.

R. Christophers amplified these remarks in respect of kidney changes found in human blackwater fever.

F. Parkes Weber referred to a form of hæmoglobinuria in man which occasionally accompanied an attack of so-called "acute hæmolytic anæmia."

J. T. Edwards raised the question of why erythrolysis in some animal species (ox, sheep) was followed by hæmoglobinuria and in others (horse, dog) by jaundice. Was it a question of differing sizes of the hæmoglobin molecule or of differences in the renal threshold? It appeared that impaired kidney function, such as might be brought about during prolonged febrile disease, might make the renal epithelium impervious to hæmoglobin since it had been observed that in cattle which had suffered from piroplasmosis for some time or when red-water fever infection flared up in them during an attack of cattle plague there was not uncommonly an absence of hæmoglobinuria.

Abstracts

[Clinical Observations on the Different Kinds of Colic in the Horse and Treatment with "Kolic-terpin," "Kolidrast" and "Sinopin." Middeldorf, R. (1934.) *Berl. tierärztl. Wschr. 50.* 40. 657-660.]

Stress is laid upon the need for accurate and detailed diagnosis in every case, there being no universal "colic cure."

"Kolic-terpin" is a mixture of oils of turpentine and camomile (proportions not stated). It is not contra-indicated in any form of colic, and may be used without risk in cases in which diagnosis is doubtful.

Ol. terebinth, by direct irritation of the mucous membranes, causes increased peristalsis and secretion. It also has powerful antizymotic properties.

Ol. chamomilæ has a sedative and quieting effect on the stomach, intestines and bladder. It contains two volatile oils, azulen and cörulein, which are antispasmodics, and a bitter principle and a resin; the latter are carminative, diuretic and slightly antiseptic.

Indications.—1, impactions; 2, distension of the stomach; 3, tympany; 4, spasmodic colic; 5, infestation of young horses with ascarids, strongyles and oxyures.

Administration.—Preferably by the stomach tube. Dose: 30 g.-80 g. of the mixture in half-a-litre of tepid water. (1-2⅔-oz. in 17-oz.).

"Kolidrast" is an anthraquinone derivative combined with purgative vegetable extracts (exact combination not stated).

Indications.—1, atonic conditions of the stomach and intestines; 2, impaction of the intestines; 3, laminitis; 4, meningitis. It may be combined with lentin and arecoline in small doses.

Actions.—Purgation through direct irritation of the mucous membrane of the bowel. Increased movement and secretions occur earlier than when aloes is used.

Administration.—By stomach tube or in a ball. Dose: 10 to 30 g. (⅓ to 1-oz.). These doses may be repeated daily without ill-effect.

"Sinopin" consists of æthyl morphine with a small amount of atropine, and is injected subcutaneously. It has the sedative effect of morphine without its constipating effect. Its exact composition is not given. In colic characterised by intestinal cramp and tympany it does not interfere with the return of normal peristalsis. It may be repeated if the pain returns. The effect is observed in 15-30 minutes and lasts for about two hours. It is not contra-indicated in atonic conditions and no unfortunate results were observed even when the injection was repeated in half-an-hour. Dose: 3-9 c.cm.

Sixteen cases of colic of various kinds are recorded, all being treated with the above-mentioned agents, and in every case recovery occurred in a satisfactory manner. While the cases are few in number, and many more results would have to be quoted and examined critically before the true value of the drugs can be estimated accurately, nevertheless there is considerable justification for the author's claims.

E. W. A.

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[Studies on Equine Colic. 1.—A Contribution on the Urine of Horses affected with Colic, especially on the Diagnostic Significance of Glycosuria. Tatezawa, E. (1934.) *J. Jap. Soc. Vet. Sci.* **13.** 4. 281-313.]

An examination of the urine was made in 100 cases of equine colic. The results were as follows:—

I.—Physical Properties.

(*a*) *Quantity of Urine.*—In cases of acute intestinal obstruction, a marked reduction in the quantity of urine was observed.

(*b*) *Colour.*—In a few cases a brownish-red colour due to hæmoglobin was observed—chiefly cases of acute obstruction with unfavourable prognoses.

(*c*) *Odour.*—An odour resembling that of raw meat was observed, chiefly in acute intestinal obstruction (seven cases out of 26).

(*d*) *Reaction.*—Acid in 15 cases of acute intestinal obstruction, in eleven out of 31 cases of impaction, and occasionally in other forms of colic.

(*e*) *Specific Gravity.*—No significant alterations.

II.—Abnormal Urinary Contents.

(*a*) *Protein.*—Observed in 29 per cent. of cases (acute obstruction 13 cases, impaction eleven cases).

(*b*) *Hæmoglobin.*—In five cases of acute obstruction, and occasionally in other forms.

(*c*) *Bile Pigment.*—Observed in 14 cases, but its significance is not known.

III.—Indican. Concentration usually high in cases of impaction.

IV.—Glycosuria was observed in 24 out of 100 cases. Of these, 21 were cases of acute intestinal obstruction (incarcerated hernias, twists, intussusceptions, mesenteric rupture). Thus in 21 out of 26 cases of acute obstruction, glucose was demonstrated in the urine. The other cases were rupture of the stomach, croupous enteritis and fæcal impaction of the small colon.

Glycosuria commenced in seven-and-a-half hours in cases of obstruction of the small intestine and eleven hours in obstruction of the large intestine.

In cases showing glycosuria, the mortality was 95·8 per cent. (23 out of 24).

Conclusion.—In particular, the relation between glycosuria and diagnosis and prognosis is emphasised.

E. W. A.

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[Persistence of the Hormone in Samples of Urine kept without Preservative. Ocariz, J., and Gilsanz, L. Ann. Rep. (1934) Inst. Anim. Biol. Span. Repub. 254-259.]

Folliculin in human, bovine and ovine urine maintains its biological activity for at least 90 days.

R. S. R.

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[On the Different Methods of Producing Local Anæsthesia in the Horse. Albrecht, A. (1934.) *Tierärztl. Rdsch.* *40.* 40 and 41. 688-692 and 708-712.]

This is a review of the different local anæsthetics and of methods of producing local and regional anæsthesia in the horse. Much of the matter here dealt with is well known or recently published in *The Veterinary Record.*

Regional Anæsthesia of the Head of the Horse.

(1) *Anæsthesia of the Infra-orbital Nerve at the Infra-orbital Foramen.*—This enables the following operations to be carried out painlessly: operations on the upper lip, nostril and the neighbouring skin.

(2) *Anæsthesia of the Infra-orbital Nerve Inside the Infra-orbital Foramen.*—Trephining the maxillary sinuses and the nasal cavity, operations on the incisor teeth and the first and second molars and their gums; in addition, those mentioned under (1).

Technique.—The infra-orbital foramen is easily palpated under the skin, and the nerve is anæsthetised by an injection of local anæsthetic close to the bone over this site. To remove sensation from the sites mentioned under (2), insert a fine needle deeply into the infra-orbital canal and inject 5-10 c.c. of a 2½ per cent. solution of novocain. (Since the nerve is purely sensory, no paralysis will follow if it is damaged.)

(3) *Infiltration of the N. Alveolar Inferior* (inferior maxillary nerve).—A method is described by which the nerve is infiltrated at the mandibular foramen, on the inner side of the mandible. It is claimed that sensation can thus be removed from the incisor and molar teeth and from the mandible.

An injection over the mental foramen (1 cm. below the centre of the interalveolar border) will anæsthetise the lip and the neighbouring skin.

E. W. A.

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[On General Anæsthesia and Narcosis in the Horse. Albrecht, A. (1934.) *Tierärztl. Rdsch. 40.* 34. 595-598.]

This review of recent methods recommended in Germany for the production of general anæsthesia and narcosis in the horse, is of interest chiefly on account of the prominence given to chloral hydrate as the drug of choice for general use.

Chloral hydrate is employed extensively, and its advantagess over chloroform are said to be its safety, rapidity and duration of its effect, the absence of the need for a qualified assistant, and also that it causes no excitement.

Intravenously 10-50 g. ($\frac{1}{3}$-$1\frac{2}{3}$ ozs.) are given in 5-50 per cent. solution. The dose depends upon the body-weight and the degree of narcosis or anæsthesia desired. The lower concentration is to be preferred as there is less risk of thrombosis. Sodium citrate may be added to avoid all risk of the latter. The full effect is produced in about 5 minutes, and lasts 1-3 hours.

By the mouth, 25-60 g. in 2-3 litres of water are administered by the stomach tube. Narcosis begins in 5-10 minutes and lasts about one hour.

Rectal administration is not advised.

The intraperitoneal method is safe and simple. A sterile 10 per cent. solution in physiological salt solution is injected. Sodium citrate, in the proportion of 1 gm. to 2 gms. of chloral hydrate, is added. Narcosis begins in 20-30 minutes and lasts 1-3 hours.

E. W. A.

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[On Epizoötic Encephalomyelitis of Horses in the Argentine. Rosenbusch, F. (1934.) *Zschr. Infektkr. Haust.* 47. 1. 48-59.]

Epidemics of equine infectious encephalomyelitis occurred in Argentine from 1919–1921, and again in 1933, the disease being comparatively benign, with low mortality, on the second occasion.

Symptoms.—At first high fever, listlessness, conjunctival hæmorrhages, rapid loss of flesh and inappetence. Then follow nervous symptoms such as muscular inco-ordination terminating in paralysis of the hind limbs, twitching of the muscles of the lips, head, neck and elbow, movement in circles, violent rushing about, and blindness.

Prognosis.— Cases showing paralysis or violence are unlikely to recover.

Etiology and Immunology.—There is experimental evidence in support of the following conclusions :

1. The cause is a neurotropic filtrable virus differing from that causing Borna disease. It is similar to the virus causing encephalomyelitis infectiosa in California, but has greater virulence.

2. Immunity following recovery is firm and protects against the Californian virus as well.

3. Dead virus injected subcutaneously produces no immunity, but living virus injected subcutaneously protects the horse against the nervous symptoms. This method should, however, be used only in areas where there is danger of natural infection.

E. W. A.

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[Spermatogenesis in the Horse. Ranquini, J. H. Ann. Rep. (1934) Inst. Anim. Biol. Span. Repub. 185-196.]

A study of the chromosome apparatus was made from sections of testicular tissue. Ranquini found 46 or 48 chromosomes in diploid nuclei and 24 or 26 in haploid nuclei. The variation may be due to the fact that some chromosomes have satellites which may become independent. The author suggests that this may be related to the origin of certain equine races.

R. S. R.

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[The Morphology of the Causal Agents of Contagious Bovine Pleuropneumonia and Agalactia, with the Discovery of Saprophytic Homologues growing in Symbiosis with Bacteria. Kleinberger, E. *J. Path. & Bact.* (i) 1934. *39.* 2. 409-420; (ii) 1935. *40.* 1. 93-105.]

In 1933, Ledingham published an article describing the phases of growth of the causal organism of pleuropneumonia and of agalactia, which was abstracted in *The Veterinary Record, 14,* 39. Those studies were carried out with impression smears of colonies at varying stages of growth.

In the first of the present articles Miss Kleinberger describes the examination of this organism by a method in which the colonial growth on agar is fixed *in situ* and is transferred to a coverslip with a minimum of disturbance to the constituent elements. The results of her investigations have confirmed, in all essential features, the phases of structure postulated by Ledingham.

In the second article a description of two pleuropneumonia-like organisms is given. These organisms have been found living symbiotically, the one with *Streptobacillus moniliformis*, the other with an unclassified streptobacillus isolated from the naso-pharynx of guinea-pigs. The pleuropneumonia organism cannot be isolated from the streptobacillus by ordinary pure culture technique, and if separated by killing the streptobacillus, the former will not grow till a few colonies of the bacillus are allowed to develop in the vicinity. It is suggested that at least some of the pleomorphic developmental cycles which have been attributed to certain bacteria may be explained by the presence of a symbiote belonging to the pleuropneumonia group of organisms.

E. J. P.

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[**Deviation of the Arneth Index after Injection of an Alkaline Extract of the Anterior Lobe of the Hypophysis.** Ocariz, J., Ann. Rep. (1934) Inst. Anim. Biol. Span. Repub. 261-275.]

Injection of guinea-pigs with alkaline extracts of the anterior lobe of the pituitary gland causes the thyroid gland to discharge the whole of its colloid reserve into the blood and this results in a deviation of the Arneth index to the left; *i.e.* there is an increase in the number of immature polymorphs secreted into the blood by the hæmopoietic organs. This deviation is not dependent on the amount of extract injected but on the amount of colloid present in the thyroid. The reaction cannot, therefore, be used to standardise the extract.

R. S. R.

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[**Newcastle Disease of Fowls.** Doyle, T. M. (1935.) *J. Comp. Path. & Therap. 48.* 1. p. 1-20.]

Newcastle disease, which was first recorded in this country by the author in 1926, has since been identified in Dutch East Indies, Philippine Islands, India, Ceylon, Korea, Japan and Australia, and with the exception of the outbreaks in Ceylon and Australia all the strains of the virus have been proved to be immunologically indistinguishable. This article records the results of experiments carried out to show that Newcastle disease, although having a superficial resemblance to fowl plague, is a separate entity. This is distinguishable from fowl plague in its period of incubation, clinical symptoms, pathological lesions, pathogenicity for pigeons, and immunologically.

Manninger (1932) includes Newcastle disease and fowl plague under one heading and regards the Newcastle virus as an attenuated strain of the fowl plague virus. This is not borne out by the evidence of natural outbreaks in which Newcastle disease is the more uniformly virulent, while contact experiments show it to be more highly infective. Characteristic respiratory symptoms occur in 70 per cent. of fowls naturally infected with Newcastle disease, but no reference to the occurrence of respiratory symptoms could be found in the recorded outbreaks of fowl plague. Manninger claims that by rapid serial passage of Newcastle virus through fowls he can exalt its virulence and render the infection indistinguishable from fowl plague. Experiments carried out on similar lines by the author did not confirm this.

Cross-immunity tests with the viruses of Newcastle disease and fowl plague showed that fowls hyperimmunised to Newcastle disease virus were susceptible to natural and artificial infection with fowl plague virus. Only one fowl was successfully immunised against fowl plague, and subsequently proved susceptible to inoculation with Newcastle virus. Serum virus neutralisation tests showed that anti-fowl plague serum partly neutralised fowl plague virus, but had no effect on the Newcastle virus, and that anti-Newcastle disease serum completely neutralised the Newcastle disease virus, but had no effect on the fowl plague virus.

From the experiments recorded it is shown that the inoculation of pigeons provides a reliable means for the differential diagnosis of Newcastle disease and fowl plague. Pigeons of all ages are susceptible to artificial infection with Newcastle disease virus, but are highly resistant to artificial infection with fowl plague virus even in massive doses.

Owing to its wide distribution, high virulence and infectivity Newcastle disease is a serious menace to the poultry industry, and it is essential that it be regarded as a separate disease or confusion in diagnosis and errors in the appropriate methods of control will result.

R. F. G.

A DRENCH THAT WENT THE WRONG WAY

At Ballymoney Quarter Sessions, on June 27th, Mr. Hugh Henderson, farmer, Croagh, was awarded £15, with £1 1s. witnesses' expenses, against Mr. Samuel Morrison, ph.c., Bushmills, in an action arising from the administration of a drench to a horse. The plaintiff said the animal was twelve years of age and a good worker. It suffered from worms. He asked for a powder, but Mr. Morrison said it was customary now to give drenches. The defendant gave the drench, and the animal knocked the bottle from his hand. The defendant said he would put it down in spite of the animal. It gave a cough and died later. Mr. John C. Cammock said he carried out a *post-mortem* examination. The animal died of pneumonia as a result of the drench going down the wrong way. Mr. Morrison said Henderson asked him to administer the drench, as he was not very good at it. Witness gave it as well as anyone could. Judge Bates said the animal died as a result of the drench.—*Chemist and Druggist.*

Report

CITY OF LIVERPOOL

Summary of the Annual Report of the Chief Veterinary Officer for the Year 1934

The work of the City of Liverpool Veterinary Department consists chiefly of:—

(1) The management and maintenance of the Health Committee's stud.

(2) Veterinary attention to horses, pigs, poultry, and other animals, of the several committees of the Corporation.

(3) The supply of food and litter, harness, and shoeing to other departments.

(4) Supervision of various aspects of cattle and the city's milk supply.

(5) Administration of the Diseases of Animals Acts.

(6) Management of the departmental farm.

At the beginning of the year there were 245 horses in the stud of the department. Twenty-six were added and 25 disposed of during the year, the stud therefore comprising at the end of the year 246 horses.

It has been the policy of the Health Committee to enter horses from its stud for competition at various shows. Many successes have been so obtained, and during the year, out of a total of 17 entries, the Corporation horses gained three first, seven second and seven third prizes.

Approximately one-fourth of the total milk supply of the city is produced within the city boundaries, the remaining three-fourths being sent in from country districts. The tendency is for the country-produced milk to increase in amount, whilst that produced locally remains stationary or falls slightly. The cattle population of the city is estimated at 3,440 cows in milk, with a number of bulls, stores, young stock and dry cows. There are 254 licensed cowsheds with provision for 4,790 cows. During the year 31 cases of tuberculosis of the udder and one case "giving tuberculous milk" were detected, in addition to various other forms of scheduled tuberculosis. Of the 32 cases, nine were found during routine clinical examination, ten were reported as suspect by the respective owners, and 13 were detected as a result of bulk samples of milk taken by the Public Health Department proving tuberculous. Five hundred and forty-six bulk samples of milk were taken by the Public Health Department and 22 were referred to the Chief Veterinary Officer as tuberculous, consequent examination of the herds affected resulting in the detection of twelve cases of tuberculosis of the udder, one "giving tuberculous milk," and two chronic cough and showing definite clinical signs of tuberculosis. In nine cases no tuberculous animal could be detected and the supplies proved negative for tuberculosis on the day of examination of the herds, showing that the diseased animal had been removed or that the contamination had ceased. The actual calculated incidence of cows with tuberculosis of the udder or giving tuberculous milk within the city is approximately 0·77 per cent. per annum. Taking the estimated cattle population of the city at 3,440 cows in milk, the statistics for 1934 show that each animal was examined approximately twice during the year. The Chief Veterinary Officer has previously emphasised the desirability of making a regular clinical examination of all milk-producing cows at least quarterly, a policy which is now being advocated for all cows in the country. There are one Certified, one Grade "A" (tuberculin tested) and 22 Grade "A" milk producers in the city.

During the year 31 farms outside the city sent in milk which proved to be tuberculous, in respect of which 27 visits were paid under the Milk and Dairies (Consolidation) Act, 1915, the remaining four cases being already under investigation by the county authorities concerned at the time the samples taken in Liverpool proved to be tuberculous. The total number of cattle examined in connection with these cases was 1,625, resulting in the detection of 23 cases of tuberculosis of the udder. In 13 instances no tuberculous cow was detected, although the contamination was eliminated.

The Port Sanitary and Hospitals Committee takes about 878 gallons of Grade "A" (tuberculin tested) milk and 1,116 of ordinary milk per day, the former being used for drinking and the latter for culinary purposes. The total amount consumed annually is therefore about 728,000 gallons. One hundred and eight visits were paid to farms supplying milk to the Corporation hospitals and institutions, involving the examination of 6,114 cows.

During the year 50 cows were slaughtered under the Tuberculosis Order, 1925, involving the examination of 1,223 animals. Of the 50 cases, 40 were found on *post-mortem* examination to be suffering from "advanced" tuberculosis within the meaning of the Tuberculosis Order, and ten "not advanced."

No cases of anthrax, glanders, parasitic mange, foot-and-mouth disease, rabies or sheep scab occurred during the year. Until April 11th, 1934, when it was revoked, the Lancashire Swine Fever Infected Area Order of 1933 imposed restrictions on the city. One case of swine fever occurred in city pigs during the year. Ten suspicious cases were investigated but were found not to be swine fever. In nine cases pigs sent in for slaughter from outside districts were reported to the Ministry of

(*Continued at foot of column* 1, *page* 928)

N.V.M.A. Divisional Reports

SCOTTISH METROPOLITAN V.M.A.

ANNUAL MEETING AT EDINBURGH

Mr. J. W. Burgess on "Retention of Fœtal Membranes in the Cow"

Major A. Spreull's Presidential Address

The Annual Meeting of the Scottish Metropolitan Division, N.V.M.A., was held in the Royal (Dick) Veterinary College on Wednesday, February 27th, 1935. Major A. Spreull occupied the chair, and there were also present: Major R. G. Anderson, Dr. O. Charnock Bradley, Messrs. A. Brownlee, J. W. Burgess, D. Cameron, Dr. H. Dryerre, Messrs. H. F. Downie, A. Gofton, Drs. J. Russell Greig, W. S. Gordon, Messrs. G. R. Jamieson, W. Harris, J. Ker, Professor R. G. Linton, Major J. G. MacGregor, Professor W. M. Mitchell, Messrs. D. R. Macrae, W. Nairn, A. Linton Robertson, A. Sillars, Walter Scott, J. A. Taylor, A. W. Taylor, E. G. Wood, H. M. Wilson, D. R. Wilson, and the Hon. Secretary and Treasurer, Mr. J. N. Ritchie. The following gentlemen were present as visitors: Messrs. J. Cameron, W. Duncan, Professor J. W. Emslie, Messrs. S. Jamieson, J. McLintock, T. F. Stokes, R. M. Shepherd, and D. Slavin.

Apologies for absence were intimated from Mr. W. Anderson, Professor Boddie, Messrs. Esmond Brown, A. K. Cameron, A. M. Larnach, J. D. MacLaughlin, Professor W. C. Miller, and Mr. W. Jackson Young.

The minutes of the previous meeting, having been published in *The Veterinary Record*, were taken as read and signed as correct.

Correspondence.—A letter was read from the General Secretary, N.V.M.A., with regard to the inauguration of a scheme for conjoint membership of the N.V.M.A. and Divisions. After some discussion it was proposed by Mr. Gofton and seconded by Professor Linton that "**The present position be adhered to.**" The meeting resolved accordingly.

Resignations.—The resignations from membership of Mr. Esmond Brown, and of Professor W. C. Miller were submitted. It was agreed to accept the resignations with regret and the Secretary was instructed to write both gentlemen conveying the thanks of the members for their services to the Division.

Finance.—The Treasurer's report was submitted and approved. Mr. Gofton moved that the Division send a subscription of £10 10s. to the Victoria Veterinary Benevolent Fund. This was seconded by Dr. Bradley and carried unanimously.

Resignation of Secretary and Treasurer.—The resignation of the Secretary and Treasurer, Mr. J. N. Ritchie, was intimated and accepted. Professor Mitchell moved that the Division should record its appreciation of the services which the Secretary had rendered.

Major J. G. MacGregor proposed that Mr. J. W. Burgess be elected Hon. Secretary and Treasurer. This was seconded by Mr. Nairn and carried.

Election of Members.—On the motion of Mr. Nairn, seconded by Mr. G. R. Jamieson, the following gentlemen were elected to membership of the Division: Messrs. J. W. Burgess, E. R. Corrigall, W. Harris, D. R. Macrae, J. D. MacLaughlan, J. Murray, J. M. Rorrison, A. W. Taylor, and W. Jackson Young.

Nominations. — The Secretary proposed Messrs. W. A. Ireland and A. P. Steele, and Mr. G. R. Jamieson proposed Mr. A. W. Grant. The propositions were seconded by Mr. H. M. Wilson.

Election of Members to the Council, N.V.M.A.—The following were elected to represent the Division on the Council, N.V.M.A.: The President (Major Spreull), Professor W. M. Mitchell, Mr. J. N. Ritchie, and the Hon. Secretary (Mr. J. W. Burgess).

Paper.—The President then called on Mr. Burgess to present his paper, which was as follows.

Retention of Fœtal Membranes in the Cow

J. W. Burgess, M.R.C.V.S.

No doubt many of you will expect to hear something extraordinary to-day, if you have taken in a broad sense the title of my paper given in *The Veterinary Record*. I am afraid you will be a little disappointed, for after casting my mind over the whole subject I thought retention of the membranes one of the most important conditions in connection with parturition, and beg leave to give you a few disjointed remarks on the subject from a young man's point of view. I hope I can stimulate a discussion and that we may thus have a really good exchange of views on the matter.

The cause and treatment of the condition has given rise to much theory and controversy at one time or another. It is generally recognised that retention of the membranes for, say, longer than 24 hours is abnormal. Moreover, it is generally found that if they do not come away in a few hours there is a tendency for them to be retained over a long period. In some cases

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Agriculture and Fisheries as suspicious of swine fever. Subsequent action in these cases takes place in the district of the origin of the pigs, and no complete information is available.

During the year 8,842 cattle, 44,277 sheep and 483 pigs were exposed for sale at Stanley Cattle Market.

natural expulsion takes place at the third or fourth day.

It is a well-recognised fact that retention of the membranes is most common in herds affected with contagious abortion and it is my belief that in the great majority of cases, although actual abortion may not take place, the condition is due to the presence of *Br. abortus*. Writers on the subject, however, do not all agree as to this being so.

In the cow which aborts, say, before the fifth month of pregnancy, the membranes are not usually retained but are expelled with the fœtus. This is due to the fact that up to this period the association between chorion and uterus is not so intimate as later in pregnancy. After about the fifth month, however, the intimacy between the two increases right up to parturition. Upon the uterine cotyledons deep crypts develop while on the placental cotyledons are outgrowths or villi averaging about ½ inch long, which fit intimately the corresponding crypt in the uterine cotyledon. These villi consist of branching capillaries with extremely thin walls. These by their intimacy with the cotyledons bring about the exchange of nutriment and waste products between the fœtus and the mother.

There is no fusion, however, between the maternal and fœtal cotyledons. There is no exchange of blood cells between the two, and no visible micro-organisms can pass through this filter. As long as the fœtus is alive there is a strong attachment between the placenta and uterus, but should the fœtus die or the umbilical cord be ruptured as in a normal parturition the attachment between the two ceases, and in a normal parturition, after the chorion separates from the uterus, the membranes are expelled by the involution or contraction of the uterus. The contraction of the uterus therefore takes no part in the separation of the membranes from the organ. Various causes have been put forward as having a bearing on retained placentæ—improper feeding, chills, debility, etc. As I have already mentioned, I believe practically all cases to be due to *Br. abortus* infection. Williams, on examining a large number of cases of retained placenta in the abattoir found that the firm adhesion was due to an inflamed, swollen and turgid condition of the cotyledon grasping firmly the placental villi, and not as might be supposed, an inflammatory adhesion between the two.

It has always been my experience that whenever I began to get cases of retained placentæ on a farm, contagious abortion was present in the herd. In many cases only an occasional animal would abort now and then, at other times a large proportion of the herd. On no occasion have I had to remove fœtal membranes on any farm which I knew to be free from contagious abortion, and this further confirms my opinion. I do not think that anatomical form has anything to do with the condition as is so often supposed, and I am sure that if contagious abortion were wiped out the number of cases of retention would immediately fall to zero or very near it.

With regard to the treatment of the condition, I am all in favour of the removal of the membranes at a fairly early stage. Possibly some of you will disagree, but if we take it that there is already a retention, or at least an inflammation of the cotyledons we are certainly not going to improve matters by allowing a perhaps rapidly putrefying mass to remain in close contact with it. In practice we meet with the condition at all stages, from a day to 14 days after parturition and even longer, and also in all stages of decomposition. Very often you can tell from what shows at the vulva what sort of task confronts you. I do not like to see the small thin shreddy piece of membrane which protrudes only a short distance from the vulva. In many instances it is impossible to strip the membrane from the cotyledons without tearing the chorion and leaving a portion of it attached. Often, in these cases, the chorion is tender and thin, which adds to the difficulty. Probably the best thing to do in such a case is to leave it alone and have another try a day or two later, but here one is faced with a perhaps rapidly decomposing non-placental part.

Perhaps the best average time for removal after parturition is on the third day, but no definite time can be given, and it must be altered to suit the condition of the cow and also the membranes. By the third day there is a chance of a slight suppurative process setting in between the attachments, thus facilitating removal.

In some cases the cervix will have contracted on the membranes thereby holding them, although the membranes have become detached inside.

In cases in which the membranes are very difficult to remove two large gelatine capsules containing H_2O_2 can be inserted, one into each horn, and the animal left for a day, when it will generally be found that stripping is much easier. Contrary to general belief, I have found that the loss of a few or even many cotyledons does little harm, when decomposition has set in, and they come away easily or have loosened themselves.

It used to be my custom to douche out every case from which the membranes were removed. Latterly I have ceased to do so, except in certain cases, and find they do better without it. It is impossible thoroughly to syphon out

all fluid even when helped by uterine contractions and a certain amount is always left behind. The weight of this fluid in a paralysed uterus will hinder involution. It soon loses its antiseptic properties and instead of retarding infection it will hasten it, and also probably be partly absorbed. In cases where the cervix is practically closed and the membranes are imprisoned, it is very bad practice to inject fluids. I only douche cows in which the membranes have become liquefied or partly liquefied, as much of the decomposed material can be washed out or syphoned off. A warm douche will also stimulate contraction to a certain extent but swabbing out the uterus with a piece of gauze is much to be preferred. Plenty of exercise is often useful in bringing back tone. For pessaries I have little use. They are certainly handy to use in the presence of a client, if little else can be done at the time. They must perforce contain a very low percentage of antiseptic and one or two in a large flaccid, septic uterus cannot do much good; however, they cannot do harm, except perhaps those containing iodoform and other strong-smelling drugs, which are inclined to taint the milk for some time after insertion.

There may be among you some who never advocate removal. Some inject warm watery antiseptics which have the disadvantages which I have already mentioned. Some insert pessaries and recommend so-called cleansing drenches. The ergot preparations, both tincture and powder, are inert. These drenches all contain salts, which after acting create a condition the opposite of straining. Others again apply mustard blisters over the loins, for reasons known only to themselves.

Nevertheless, this waiting game has its advantages. It gets you out of doing a very disagreeable and often arduous task. I would ask those who disagree with me as to whether we should remove or attempt to remove the membranes by hand to consider the often fatal results of retention of the placenta in the cow which has given birth to twin calves. In these cases the membranes *have* to be removed fairly early. Most of us know what to expect if they are not.

Until we are able to rid our herds of contagious abortion we shall be faced with the problem of the retained placenta and although the tightening up of the regulations already in force regarding exposure at auction marts would no doubt help a great deal, it will take a long time to control it and finally stamp it out. One of the greatest problems is the cow which carries to full time—is exposed for sale, is sold and takes her infection with her, possibly into a clean herd. This animal cannot be controlled by any legislation.

Discussion

Mr. Nairn, who opened the discussion, agreed that the heroic measures which were often practised were not very satisfactory: he usually took the middle course. He was satisfied that there were many cases of retained membranes which were not associated with the *Brucella abortus*, although he agreed that this infection very often gave rise to the condition under discussion.

He had noticed that retained fœtal membranes were more commonly found in dairy herds than in herds where the cows were suckled, and believed that with this stimulus the tone of the uterus was better and the membranes were shed naturally.

Mr. Nairn supported the essayist's contention that it was bad practice to inject a quantity of fluids early after calving, where the membranes were retained: he usually inserted a pessary and waited. He believed in removing the membranes not earlier than the third day and said he had few casualties when the membranes were removed carefully at that time. He was not averse to douches at the third day, but the fluid must be syphoned off and the uterus left as empty as possible. Later than this time it was impossible to guarantee that the fluids could be syphoned off properly. If the temperature was elevated two days after removal, he usually syphoned the fluid off with a rubber tube and after the removal of the fluid the temperature generally dropped. In his earlier days he had attempted to invent a tube which could be left *in situ* for drainage; this had never been successfully achieved.

He had treated a great many cases of retained fœtal membranes but had never had a high percentage of casualties. Like Mr. Burgess, he did not use pessaries at this stage, not because of the odour but because of the cost. He was not averse to iodoform but when he did use it he diluted it one in ten with boric acid.

Mr. Burgess had suggested that medicinal remedies were useless. He was surprised that pituitrin had not been mentioned: he had found it most effective in selected cases such as after triplets or with hydrops amnii, where the cow would have died if some specific interference had not been practised. In these cases one could look too closely at the cost and he had found 6 to 10 c.cs. of pituitrin good for the removal of the membranes.

He thanked Mr. Burgess very much for introducing an interesting subject and for an excellent practical paper.

Major A. L. Robertson stated that his experience and that of Mr. Burgess seemed to be very similar. At one time when he was in an entirely dairying district he douched out the uterus but now he had departed from this practice. He liked to get the membranes away as soon as

possible; he took away as much as he could and then used a pessary. He was interested in Mr. Burgess's use of hydrogen peroxide—he had never employed it but he would try it now. He had had good results with pessaries of charcoal, also with common salt wrapped up in gauze—he left a string protruding from the vulva and was able to get the gauze away later. His objection to iodoform was the difficulty of ridding his person of the smell, how did Mr. Nairn achieve that?

He always used rubber gloves and long rubber sleeves, as he was peculiarly prone to infection in such cases. It was amazing how quickly one could get used to the "feel" of tissues, etc., through the rubber gloves.

Like Mr. Burgess, he had not found bad results to follow from the removal of one or two cotyledons. When he did douche he tried to get as much fluid away as possible. Often he found he got so much away and then a cotyledon or a piece of membrane became wedged in the mouth of the tube; he had recently been talking to a practitioner about this and was told that a return flow catheter was useful. He was convinced that so far from the closing of the cervix being the only cause of retention of fluid, the fact that the fluid reached the lowest part of a flaccid uterus was the chief cause.

Mr. H. M. Wilson observed that it so happened he had been called that morning to a case of retained membranes in a cow which had calved on the Saturday. There was not much membrane left and it was very difficult to get the hand into the uterus to remove it. Would Mr. Burgess carry on and attempt to force his hand into the uterus, or wait? He had no faith in drenches, which only caused scouring and simply added to the mess of an already messy job. He used pessaries but found, when pessaries were used after calving, that if the membranes were retained they were more difficult to remove than when no pessary had been used—the pessaries seemingly preventing decomposition of membranes. Mr. Burgess had stated that if contagious abortion were removed cases of retained membranes would fall to zero. He did not agree. There were other causes; he had found cows which retained the membranes give negative results to the agglutination test for abortion.

Mr. Gofton, after thanking Mr. Burgess for his paper, said that he was a little amused at the inconsistency of the opener of the discussion, when he quibbled at the use of pessaries because they were too expensive and later recommended the use of pituitrin, notwithstanding its high price. In conversation, a year or so ago, with two farmer brothers who, between them, kept about 200 head of dairy cows, he had been told that for some years the brothers had themselves dealt with all cases of retained placenta in their stock by the insertion of pessaries, and they claimed that, since adopting this procedure, they had never lost a cow and had not suffered the casualties which they previously incurred when the retained placentæ were removed manually by a veterinary surgeon. This seemed rather a reflection on the methods used by the veterinary surgeon. He was not inclined to belittle pessaries, but there were limits to the value attaching to their use. He thought that any factor which contributed to the delay of decomposition until the natural separation of the membranes had begun, or had actually taken place, was not to be ignored. After removal of the membranes he considered swabbing the womb of value since it provided the means of removing much decomposing matter which would otherwise be left *in situ*. He agreed with Professor Mitchell that more harm was often done by premature interference in cases of retained membranes than by a little delay.

He asked Mr. Burgess what authority he had for the statement that the fœtal membranes constituted an effective barrier to the penetration of any microscopically visible micro-organism from the uterus to the fœtus. If Mr. Burgess believed the fœtal membranes constituted an impenetrable barrier, how did he explain the presence of abortion bacilli in a fœtal stomach, or the widespread lesions of congenital tuberculosis in a calf born of a cow with tuberculosis of the uterus.

The present Epizoötic Abortion Order was impracticable. It was impossible to say, a week or ten days after a cow had calved and cleansed, whether abortion had taken place or not. A positive agglutination test was merely evidence of infection with the abortion bacillus. It was no evidence of abortion. He was not prepared to go so far as Mr. Burgess as to the cause of retained membranes, but his experience was that, in a herd in which contagious abortion prevailed the percentage of retained membranes was in direct relation to the percentage of abortions. As the abortion rate fell, so did the number of retained membranes, and the converse was equally true.

Professor W. M. Mitchell said it had been his habit to tell classes that, speaking generally, they had only to deal with two conditions in surgery—inflammation and tumours. This was one of the inflammatory conditions and he thought it should be remembered that retention of the fœtal membranes was due to inflammation in placental areas. The process of inflammation in placental areas was analogous with the processes seen in ordinary infected surface wounds where it was fully appreciated that it was often unwise to interfere surgically to remove firmly adherent necrotic tissue.

How often the message to "come and cleanse a cow" was received and we were expected by clients to insert the hand and arm into the genital

passage and remove the membranes and that would be the end of the trouble. No person could remove the membranes completely in all cases and the man who pretended to do so was merely gulling the public. The problem was essentially one of educating clients as to what retention of the fœtal membranes really meant.

It was impossible to lay down a time when it was best to remove the membranes; every case had to be judged on its merits, which depended upon a clinical examination of the cow. If the membranes would not come away without laceration of the maternal placenta then it was much better to leave the animal alone for a few more days than risk breaking the bacterial barrier of leucocytes and inflammatory exudate in the wall of the uterus.

Dr. J. Russell Greig thought that there was one aspect of the matter to which he might usefully draw attention. It was well recognised that in atonic conditions of the uterus, the parenteral injection of assimilable salts of calcium effected a rapid restoration of tonus, and this restoration of tonus permitted the organ to undergo contraction. In a number of cases of retention of the placental membranes in cows, the uterus was flaccid and atonic. Several practitioners had reported to him that the parenteral injection of calcium gluconate had been quickly followed by expulsion of the membranes. Such an effect would not follow in cases in which retention was due to inflammatory adhesions, but the point might be worth noting as, during the immediate post-parturient state, blood calcium tended to be low and this might account for the flaccid condition of the uterus.

The President said he was satisfied that contagious abortion had a great deal to do with retention of fœtal membranes, but it was not the sole cause. For many years he had used douching and he did think it a good practice to drain off and re-drain off all septic material. He often packed with a salt pessary or magnesium sulphate. He had been amused some time ago by a client who had been south buying Ayrshires at a place where the owner used pessaries. He noticed one or two with retained membranes and asked the owner if he did not get his veterinary surgeon to remove them. "No," said the owner, "but I bury a puckle." No one had mentioned that the movement of the hand in the uterus had some influence in causing the womb to contract.

He thought that if the placenta could be removed in 24 hours it would have expelled itself; it was best to wait for three or more days.

He thanked Mr. Burgess and asked him to reply to the discussion.

Before the latter complied, Mr. Nairn remarked that he had not really been inconsistent, as he had said he used pituitrin in particular cases where if he had not taken some specific line of treatment the cow's life would have been endangered. He argued that many cases of retained fœtal membranes went on happily if left alone. He remembered a case where he douched the uterus and mopped out the fluid instead of syphoning; in two days the temperature was up to 105° and the cow was off her food, but removal of the fluid had had a spectacular effect and the cow recovered quickly.

Discussions on this subject had not changed in thirty years.

Mr. Burgess, in a short reply, thanked the members for the reception they had given his paper. He had not tried pituitrin for the purpose of expelling the membranes in the larger animals. It was certainly useful for that purpose in the small animals, but he doubted its efficacy in a closely attached fœtal membrane in a cow. He was interested to hear of Mr. Robertson's charcoal pessaries and of the common salt in a muslin bag, and would certainly try the latter at the first opportunity he had. In reply to Mr. Wilson, he would if possible remove any remaining piece of membrane if it could be done without injury to the animal.

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Presidential Address

Changing Conditions of Practice

The President, Major A. Spreull, now gave his Address from the Chair, which was in the following terms:—

First of all let me thank you for the honour you have conferred upon me, in electing me President of the Scottish Metropolitan Division, N.V.M.A., a position that I have carefully avoided for some years, but which with my sons helping me at Dundee, I felt I could no longer decline.

To deliver a Presidential Address is an entirely new experience for me and after considerable thought I decided that some personal experiences as a student and practitioner for the past 40 odd years might amuse you.

General practice conditions in the early 'nineties were a very different matter from those of to-day. Our patients were mainly horses of all classes; cattle practice with an occasional donkey, sheep or pig and a few dogs and cats took up the rest of our time. The last-named were either for castration or destruction.

Our mode of locomotion was almost entirely riding or driving, when wicked ponies, if fast enough, usually carried the veterinary surgeon or filled his shafts.

Most veterinary surgeons in town or city and many in the country had forges. Horse practice largely comprised examinations for soundness and dealing with lamenesses, of which at least 75 per cent. were foot cases. Horse-shoe nails were not of the present quality and excellence; many nails were hand made and pointed before

being driven, were soft or hard, split or bent and were responsible for many foot injuries. During frost or snow, shoes were roughed or sharped, sometimes every second day on the streets, which entailed constant removal of shoes and caused broken feet and many lamenesses. Quittors were treated with injections or corrosive plugs. Tooth rasping, cutting or extractions awaited you in the yard each morning. Speedy cuts, over-reaches, treads, wounds and broken knees due to the condition of the roads and bad shoeing were every-day occurrences. Colics, stoppages, twists and dust-balls were your daily or nightly cases. Horses and men worked from 6 a.m. till all hours of the night with perhaps an hour at mid-day, when a nose-bag was slung on for a break. In heavy horse departments boiled food mashes were given each night—masses of cooked barley, beans and turnips, etc., which were bolted by exhausted horses with the inevitable results. Even when dry food was given the grain was seldom properly cleaned of grit, stones and dirt, and was often heated or musty. Pink eye epidemics, with their sequelæ of pneumonia and purpura, were common, as the stabling and hygiene were often primitive. Windows, doors and the occasional ventilators were carefully closed and packed to prevent draughts.

Drenches for colic or fever were the order of the day and these were responsible for many traumatic pneumonias. Students were horse-lovers; most of them had had a practical training in handling stock from boyhood. There were farmers' sons, sons of trainers or veterinary surgeons, or sons of the forge: some others were articled to veterinary surgeons for three or four years as improvers who spent their lives and vacations as unpaid glorified grooms washing gigs, sponging saddles and harness, grooming and exercising the veterinary surgeon's horses or patients, working in the forge or punching up physic powders, etc., after hours. As there were then very few proprietary drugs or firms who made up medicines, improvers certainly learned the use of the British Pharmacopœia and how to compound and make up the various draughts, balls, electuaries, blisters and ointments, for in Scotland at any rate, everything was prescribed and made up for individual cases. In the summer and quiet seasons a certain quantity of stock medicines was put up.

All colts were cast for castration; clams, the hot iron or torsion were the methods employed and the écraseur was just coming into general use. Despite slow locomotion and antiquated methods it was wonderful how much hard work these practitioners got through from daylight till dark.

Breeding was at its zenith and springtime meant hard labour for the veterinary surgeon, what with foaling, calving, cleansing and castrations. The practitioner would drive into the yard, catch and halter, cast and operate on a colt and be off again in 25 minutes. Perhaps once a week there would be an everted uterus as a pastime. There was no spinal anæsthesia and the chloroform muzzle was seldom carried then; a dose of chloral was given, a rope tourniquet placed round the chest and then you stripped to the buff and got on with it. If you were lucky enough to replace the organ without damage you retained the womb with a rope truss, or a primitive method was the champagne quart with vulval stitches and the hind-quarters raised. Animals were chloroformed for major operations; hæmorrhage was controlled by ligature, hot iron or ferri perchlor., packing and stitching. Antiseptic surgery was attempted, not aseptic.

In 1896 I joined the New Veterinary College in Leith Walk. Our Principal was the late W. Williams, or "Old Billy" as he was affectionately called in contradistinction to his son, W. Owen Williams, who was "Young Billy." The Principal was perhaps the finest old practical veterinary surgeon of that time and a wonderful teacher. When on the subject of lameness his practical demonstrations in class, when he hobbled around in his white spats and imitated each particular lameness can never be forgotten by his students. His staff in the first and second years consisted of the late Ivison McAdam on Chemistry, a very fine teacher; Dr. Stewart MacDougal, so well known to most of us, who taught Botany and Zoology—and his demonstrations and anecdotes and the odd excursions he arranged in the country, to the seashore or to the Botanical Gardens could not fail to impress these subjects on even the most inattentive. Professor O. Charnock Bradley, so painstaking and thorough, was working hard for his medical degree, just beginning to impress his authority and to repress the muscle fights and chaos of the New Veterinary College dissecting room when too studious young anatomists had to work under a barrage of fascia, whilst cricket enthusiasts, armed with a dry fore-limb and scapula defended themselves from all comers. Dear old Dr. Hunter ("Froggie"), so kindly and patient, endeavoured to teach us Physics; how he ever carried on with such a troop is beyond me. Professor W. R. Davis taught us Stable Management and Hygiene and in the third year, Materia Medica; but with quite a busy practice being carried on at the same time we were always much happier to get away with him to a round of cases in the dog cart than to study harness, saddlery, feeding, shoeing and ventilation.

In 1897 Principal Williams stood for the Edinburgh Council. Students had a holiday for a day or two for canvassing. On the polling

day senior students drove the voters to the various booths in the college vehicles, and the Principal went in at the top of the poll.

At that time they had two thoroughbred stallions at stud in the college, Humbolt and Marco Polo, and there was quite a number of other horses. There were also two very fine sittings of Indian Game fowls. The parents had been brought from Jamaica by the Principal. Caponising was then being practised and I was persuaded by some of my fellow students to show them the operation. All the cockerels were secured and the demonstration carried out; they were a bit old, several of the ribs snapped when using the spreaders but we had no deaths, and although many of the cockerels hopped around with a drooped wing for many days they eventually recovered and the injuries were blamed on rats. In the winter of 1898 Professor Davis left for South Africa on rinderpest duty and we dragged him to the Caledonian Station in an open carriage.

In 1899 the South African War broke out. We worked away for the first term as we understood that W. O. Williams had volunteered to raise and take out a detachment of students for veterinary hospital work. This hung fire, however, and on returning to college in January, 1900, a meeting of enthusiasts was called; many volunteered but only three turned up at the Waverley next morning (Billy Lindsay, Macdonald and myself). Lindsay was failed in Riding School, but "Mac" and I were accepted and sailed with the Fife and Forfar Yeomanry in February. Were we censured by the college authorities? No! We came back before sailing and had a royal welcome and send-off by the Principal and our fellow students.

We had a great time fighting in South Africa. We met Dr. Hutcheon, head of the Cape Veterinary Services; Dutchin, of Newcastle; Captain Nicoll, one of the "40 thieves," and several old fellow students. Remounts were chiefly South American range horses; other remounts were procured from Boer farms but were mostly unbroken youngsters and mares in foal. We saw farcy and glanders, pleuro-pneumonia, horse-sickness and tulp-grass poisoning. The veterinary hospital and remount depôts were only in the big towns. Each morning's duty on trek was to shoot out whatever could not travel. MacDonald was shot through the hip in Orange River Colony in 1901; it was not a serious wound, but he seemed horribly annoyed as he would be unable to show his honourable scar.

I returned in 1901. As Principal Williams had died I joined the Royal Veterinary College, London, for the final year studies. There I had as fellow students G. P. Male, Professor J. F. Craig, and many others who are now prominent members of the profession. At that time there was an enormous free clinique. Dogs and cats were seen from 10 till 12, horses and cattle from 2 till 4. Quittors, side-bone operations, neurectomies, fistulous withers and poll-evil were commonly seen. If you were keen you could always buy operations, and I spent all my South African "blood money" and Ralli Memorial money on that.

The staff in the final year were Sir John M'Fadyean, Professor Jas. Macqueen, Professor John Penberthy and Professor Woodruff, who had taken Professor Hobday's place.

Professor Macqueen was a particularly fine operator for that time and a strict disciplinarian. On one occasion many students were rather merry before his 4 o'clock class; he noticed it and remarked, "Well, gentlemen, you don't seem to be in a condition to assimilate the knowledge I desired to impart to you, so I will leave you till to-morrow," and departed.

I qualified in 1902 but returned in 1904 for a post-graduate course and met Gray, from Rhodesia, Colonels Tatham, Walker, Baldrey, England and Ferntoff. I was in practice from 1902 till 1908. It was still a case of saddle or trap. Carriage horses were gradually going out and motors and motor lorries taking their place. There was no more casting for castrations, for the standing operation was now general. Chloroform and cocaine had come into their own. Milk fever was simplified by Schmit's inflation method, though chinosol and potassium iodide solution were used to begin with. Thermo-cauteries were replacing the old irons. Vaginal clams, pessaries, emasculators and more or less efficient obstetrical instruments had been introduced. Drug firms were now supplying made-up medicines. Arecoline was replacing physostygmine and barium chloride. Most veterinary surgeons had their own cars towards 1910, though the pony and trap still held sway. The stomach pump and gastric lavage was adopted prior to the war. The hypodermic syringe was taking the place of the old drenches and powders. Abdominal operations and anæsthetics were becoming common in smaller animals from 1900 onwards. Small-animal practice was booming and practically all veterinary establishments were catering for the welfare of dogs and cats.

Then came mobilisation in August, 1914. A hectic fortnight was spent examining and purchasing remounts. We were all at war stations. The ravages of strangles were soon seen and we were busy replacing horses, perhaps too hurriedly purchased, which did not stand the intensive training. The best were shipped across the Channel to the Expeditionary Force and the first Territorial Units in France. No decent replacements were available for units at home. There were weary months at war stations and then gradually we were shipped

across the Channel or to the East in 1915. Territorial and civilian veterinary surgeons were now officers with Mobile Sections, remounts or units. Hostilities in Belgium and France were more or less at a standstill. Those of us keen on surgery at least had the opportunity to practise and extend our knowledge and technique more or less in comfort and at leisure. There was plenty of material and trained help, at our beck and call, instead of a student or a few farm-hands as assistants. Surgery, both human and veterinary, made tremendous strides. Perrier operations, removal of shrapnel and bullets, roaring operations, etc., were our every-day work and I can assure you that the base hospitals did not get them all. Each Division and unit were proud of their horses, and did not send any more than they could help to the rail head, if there was a possibility of treating them at the front. And so for four (nearly five) years of glorious experience for most of us we served as veterinary officers.

Then came 1919, demobilisation, and the move back to the home fire, scarcely burning, back to humdrum every-day practice. Most things had to be renewed, drugs and instruments were out of date and it was no wonder after five years' absence. We were a lot older and weary; perhaps a little wiser, but with so much to relearn and many things to forget. It was useless hullooing for your batman or your R.A.V.C. sergeant, but had just to shed your coat and do it yourself again. There were old friends greeting you, new friends meeting you; the loyalty and return of your old clientèle, perhaps not all of them, but at least enough to get you going once more.

That is nearly 16 years ago; one can hardly realise it. Now the mechanical age has come and just enough horse practice is left to keep the old practitioner interested. You still have the old cow with her troubles to make you carry your overall and take your antiseptic bath each night; and certainly there is an extension in practice amongst the smaller animals of the farmhouse.

Now is the age of the hypodermic syringe with subcutaneous, intravenous, intramuscular, and intraperitoneal injections; and injections of prophylactic and curative vaccines and sera.

Our veterinary science advances from year to year. In those early days the profession consisted of practitioners, college staffs, the Ministry, the army, and a few colonial officials. Now we have, in addition, city officers, county officers, various classes of research workers, and an ever-increasing number of colonial and other officials. One wonders where it is all leading to. Will the general practitioner, the backbone of the profession, lose his independence and submerge his individuality in the alleged Utopia —a State Veterinary Service?

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The meeting closed with a hearty vote of thanks to the President for his address and for his conduct of the proceedings.

G. W. Burgess, *Hon. Secretary.*

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WESTERN COUNTIES V.M.A.*

ANNUAL MEETING AT EXETER

The Fifty-first Annual General Meeting of the above Division was held at the Rougemont Hotel, Exeter, on Thursday, March 28th, at 2 p.m. The President, R. H. Smythe, Esq., occupied the chair, and the following members signed the attendance book: Messrs. R. H. Smythe, R. B. Nelder, Barbour, Hoddinott, A. R. Smythe, Esmond Brown, Ascoli, Irvine, W. B. Nelder, E. R. Edwards, C. V. Watkins, H. K. Roberts, E. B. D. Hall, L. W. Bovett, L. Norman, W. Blackwell, C. Masson, H. Fraser, P. Fisher, G. Roberts, J. H. Patterson, G. D. Lansley, H. Macdonald, R. E. L. Penhale, J. M. Penhale, S. J. Motton and Majors Ascott, James, Rankin and Fyrth.

The following visitors were present: Messrs. E. L. Taylor, R. Ford and A. C. Urquhart.

Apologies for absence were received from Sir Frederick Hobday, Colonel Head, Major Dunkin, and Messrs. Harvey, sen. and jun., A. G. Saunders, Gibbings, Richardson, E. C. Bovett, Thorburn, Kauntze, Crowhurst, jun., R. G. Saunders, C. Head and C. Stephens.

The minutes of the previous meeting, having been published in *The Veterinary Record,* were taken as read.

Correspondence.—A letter from the N.V.M.A. *re* the treatment of the animals of poor people was read, and the Secretary was instructed to write the Divisional representative of the R.S.P.C.A. in connection with the working of the scheme in some areas in order to develop it more fully.

Election of New Members.—The following gentlemen were unanimously elected as members of the Division—Messrs. Esmond Brown, Ascoli, Chapman, Hoddinott and Dyson.

Reports.—The Annual Reports of the Hon. Treasurer and Hon. Secretary were received and adopted.

Resignation.—The Division loses a very popular member by the resignation, owing to change of posting, of Mr. J. M. Penhale of the Ministry of Agriculture and Fisheries.

Election of Officers

The following were elected as officers for the ensuing year:—

President.—Mr. Fraser, Tavistock.

Vice-Presidents.—Messrs. R. H. Smythe, R. B. Nelder, Townson and Major James.

* Received for publication, June 23rd, 1935.

Hon. Treasurer.—Mr. R. B. Nelder.

Hon. Secretary.—Mr. S. J. Motton.

Council.—The President, Hon. Treasurer, Hon. Auditor, Hon. Secretary, and Messrs. Norman, Masson and R. H. Smythe.

Representatives on the N.V.M.A. Council (for three years).—Messrs. R. B. Nelder, R. H. Smythe and S. J. Motton.

County Secretaries.—Dorset, Major Fyrth; Somerset, Mr. A. G. Saunders; Devon, Mr. R. B. Nelder, and Cornwall, Mr. S. J. Motton.

It was decided to hold the next meeting of the Division at Liskeard.

Paper.—Mr. E. L. Taylor, B.V.Sc. (Liv.), M.R.C.V.S., D.V.H., from the laboratory of the Ministry of Agriculture and Fisheries, gave a very much appreciated paper illustrated by lantern slides and specimens under the microscope, on "The Association between Gastro-intestinal Helminths and Disease in Ruminants." [Mr. Taylor's paper, and a report of the discussion which followed its presentation, are reproduced at the commencement of this issue.—*Editor.*]

At the conclusion of the meeting votes of thanks were accorded to the retiring President and to the essayist.

S. J. Motton, *Hon. Secretary.*

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

Horse-Drawn Traffic

Mr. Logan asked the Minister of Transport whether he is aware that if his policy of discouraging and eliminating horse traction is carried out 4,000 to 5,000 carters in Liverpool will lose their employment; and whether, in view of the apprehension aroused, he is prepared to make a fuller statement of his intentions?

The Minister of Transport (Mr. Hore-Belisha): The presence of slow-moving horse traffic on the more important streets slows down other and faster moving traffic and adds to congestion. The regulations which have been in force for some time restricting the use of Oxford Street by horse-drawn and other slow-moving vehicles during the day time have facilitated the movement of motor vehicles in that street without imposing any undue hardship on the interests concerned. I am putting myself in communication with the largest users of horse transport in London, and shall take into consideration their views as to the possibility of restricting other streets at an early date, and their intention to accelerate voluntarily the substitution of motor for horse-drawn vehicles. I am further inquiring from them whether they may find it practicable to effect the necessary change-over in the course of the next three years. With regard to other large cities, I am prepared to consider any proposals which may be put before me.

Mr. Logan: Is the right hon. Gentleman aware that Liverpool differs very much from the West End of London so far as horse-drawn traffic on the line of docks is concerned? The definite statement made by the Minister may cause great perturbation if he does not give some assurance that the traffic necessary on the dockside will not be interfered with. It differs entirely from traffic in London.

Mr. Hore-Belisha: If any particular conditions apply to Liverpool, they will be taken into account. I shall only act on the representations of the local corporations. Generally, may I say that if the public demands greater freedom for the passage of traffic it is not reasonable to resist measures which may be put forward to assist their desires.

Mr. Logan: Has the right hon. Gentleman's attention been called to the observations of the President of the Chamber of Commerce of Liverpool this week and to the comments of the Chief Constable of Liverpool on the report, which has perturbed them very much? What the right hon. Gentleman has said to-day is reassuring to some extent.

Mr. Hore-Belisha: I am glad to hear that. Of course, their representations will be taken into full account.

Sir P. Harris: While I recognise the strength of his case, does the right hon. Gentleman realise that there are a very large number of unemployed among the horse drivers already, and will he have some consideration for these men in making the change-over and try to persuade the employers that if they do substitute motors for horse-drawn vehicles, they should endeavour to retain the horse drivers, who have a strong road sense, in this new form of conveyance?

Mr. Hore-Belisha: Certainly, I shall do what I can to avoid hardship.

Mr. Lawson: Has the right hon. Gentleman's attention been drawn to an admiral careering about the streets lately, in London, holding up the traffic?

Mr. G. Nicholson: Will the right hon. Gentleman not forget the interest of the costers, not only the larger interests involved, but particularly the smaller interests?

At a later date, Mr. Groves asked the Minister of Transport whether he can state in what circumstances during the past two years his department has approached the principal users of horse-drawn vehicles with the object of achieving the more rapid substitution of motor- for horse-drawn vehicles; whether he is aware of the resentment which this action has caused to British horse-breeding interests; and whether he will instruct his officials in future not to advocate any one means of transport as preferable to any other and to endeavour to hold a fair balance in such matters?

Mr. Hore-Belisha: My officials have entered into no advocacy in the matter. I would refer the hon. Member to the statement on the matter, which I made in answer to a question by the hon. Member for the Scotland Division of Liverpool (Mr. Logan) on August 1st. I am sending him a copy of the statement.

Sir J. Nall asked the Minister of Transport whether his announcements regarding inquiries as to the possible restriction of horse-drawn vehicles will be restricted to the City of London or what other centres of industry are to be included in the inquiry; and will he ensure that all relevant interests are given an opportunity of stating their views before a decision is reached?

Mr. Hore-Belisha: I would refer my hon. Friend to the statement which I made on August 1st in answer to a question by the hon. Member for the Scotland Division of Liverpool (Mr. Logan). I am sending him a copy of the statement.

Milk

Sir A. Sinclair asked the Secretary of State for Scotland whether he proposes to amend the Special Designations (of Milk) Order in accordance with the recommendations of the Committee of the Economic Advisory Council on Cattle Diseases?

Sir G. Collins: This matter is at present the subject of consultation between the Departments of Health and Agriculture for Scotland and associations representative of the various interests concerned.

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Dairy Herds (Tuberculosis)

Mr. Burnett asked the Secretary of State for Scotland whether he has completed his consideration of the report of the Cattle Diseases Committee of the Economic Advisory Council; and what steps he proposes to take with a view to the eradication of tuberculosis from dairy herds?

Sir G. Collins: The proposals contained in the report, which raises many important questions of policy, are continuing to receive my consideration in consultation with other Ministers concerned. As regards the second part of the question, I trust that the Attested Herds Scheme under Section 9 of the Milk Act, 1934, will have the effect of encouraging the eradication of tuberculosis from dairy herds. I can assure my hon. Friend that the Government attach great importance to the problem of dealing with this and other diseases of cattle.

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Foot-and-Mouth Disease

Lieut.-Colonel Acland-Troyte asked the Minister of Agriculture whether in all cases of foot-and-mouth disease inquiries are made as to whether any foreign meal has been used on the farms concerned; and, if so, whether he can state in what percentage of these farms such foreign meal has been used?

Mr. Elliot: The answer to the first part of the question is in the affirmative. Out of 136 initial or new outbreaks of foot-and-mouth disease which have occurred in Great Britain during the last ten years it was ascertained that imported meal was on the premises in 58 cases, or 43 per cent.

Lieut.-Colonel Acland-Troyte asked the Minister of Agriculture whether he is satisfied that he has sufficient powers to prevent the importation of any article which might cause foot-and-mouth disease; and, if not, whether he will obtain such powers?

Mr. Elliot: I am advised that Section 30 of the Diseases of Animals Act, 1894, confers upon the Minister all the necessary powers.

H.M. STATIONERY OFFICE PUBLICATION

The undermentioned has been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses: London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

	Price Net.	*Post Free.*
Command Paper:—	*s. d.*	*s. d.*
[4951.] Economic Advisory Council. Report, dated February 4th, 1935, of the East Africa Sub-Committee of the Tsetse Fly Committee	1 0	1 1

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 12th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Aug. 22nd.—Summer Meeting of the Mid-West Division, N.V.M.A., at Stroud.

Aug. 24th.—Last date for entries for Jubilee Memorial Prize Examination.

Sept. 24th to 25th.—Jubilee Memorial Prize Examination.

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AT BELFAST

(Continued)

The Congress Completed

Resuming where we had perforce to leave it in our last issue the wholly satisfactory story of the 1935 meeting of the Association at Belfast, we may anticipate matters somewhat and yet the better link up these summaries of events by passing at once to the Adjourned Annual General (Closing) Meeting, where the enthusiasm which greeted the induction of a practitioner President in Captain J. R. Barker, of Hereford, was both a tribute to his personal popularity and a wholehearted initial response to his earlier appeal for the united support of the constituent units of the N.V.M.A. during his term of office. The members were particularly grateful to their new President for accepting these responsibilities at a few days' notice, and their realisation of the unsatisfactory features of the present position which makes such a happening possible was reflected in their subsequent decision that provision be made for the office of President-Elect.

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The second half of the Congress programme, though including an outstandingly good discussion on the one remaining paper—that by Colonel Young—was designed to promote relaxation rather than concentration. The social climax of the week—indeed, it may be said, of the history of the Association thus far—was the banquet on Wednesday evening, when the "National" were the guests of the Government of Northern Ireland. Moreover, the Minister of Agriculture was good enough to underline his sense of the importance of the occasion by making it the opportunity for a pronouncement of great moment to the whole cattle-raising industry. Sir Basil Brooke said that he was considering the desirability of giving notice of the issue of an Order which would make an offence, or would prohibit, the exposure for sale at any market of an animal which was suffering from warble-fly infestation. When the

Order was introduced it would be the first of its kind in the British Isles and it would provide one more task for the Ministry's veterinary officers to undertake. We congratulate the Ulster Government on the invaluable lead it is giving to others in the task of eliminating a cause of loss the full extent of which has only recently been realised.

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Whole-day tours have not been popular with Provisional Committees in the past, but many Congress habitués must be hoping that they will become so should future conference centres furnish routes remotely comparable in beauty and interest with that taken by over 150 members and their friends on the Thursday. Providence provided the perfect day required for the full enjoyment of the grand Antrim Coast Road and the unique Giant's Causeway. It was a company much refreshed in mind and body that subsequently repaired to the Carlton Hotel in support of the Dance arranged by the Ladies' Benevolent Guild. That event richly rewarded the determination of all concerned to show some measure of their appreciation of much splendid endeavour on behalf of those, associated with the profession, who have had the misfortune to "fall by the wayside."

* * * * *

A greater number of members than is usual stayed on to the closing day, when a most useful discussion took place on Colonel Young's paper: "The Work of Veterinary Officers, with special reference to the Production and Inspection of Imported Meat Foods," which was an amplification, based on his unrivalled experience in the subject at home and abroad, of his argument that, to secure efficiency, the officer in charge of meat inspection should have the fullest possible knowledge of animals in health and disease. At this session the Public Health Section passed a resolution (later adopted by the Annual General Meeting) to the effect that all animals intended for human food should, as far as possible, be examined *ante-mortem* and *post-mortem*, and that all meat should be stamped; also that all Government departments should be urged to make more intensive use of the services of county veterinary staffs in connection with meat inspection in rural areas, as recommended by the English Departmental Committee on Meat Inspection.

To revert to the Closing Meeting, the assembly felt it a privilege to send to Dr. Griffith Evans, of Bangor—the subject of a biographical article in our issue of last week—a message of congratulation and affectionate esteem on the attainment of his centenary. In conclusion, it was quite obvious that all were of one mind that no more thoroughly merited presentation to a Local Secretary has ever been made than that which gave Mr. Magowan some slight indication of the measure in which his splendid services to the Association in connection with the Belfast Congress have been appreciated by the "National."

The Congress Number of *The Veterinary Record*, containing a detailed account of all the events to which reference has been made in these notes, will be published on August 24th.

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DR. GRIFFITH EVANS

Centenary Message from Their Majesties

The King and Queen joined in congratulating Dr. Griffith Evans, of Brynkynallt, Bangor, who on Thursday last, with members of his family, celebrated his hundredth birthday. The following telegram was read by him in his bedroom:—

"The King and Queen are much interested to hear that to-day you celebrate your hundredth birthday, and desire me to convey to you their hearty congratulations. Their Majesties are aware of your distinguished services to veterinary science and send you their best wishes on this great anniversary."

The Prince of Wales also sent a telegram "with sincere congratulations on your hundredth birthday," and messages of congratulation came from all parts of the country, including one from Mr. Lloyd George.

The congratulations of the King and Queen arrived when Dr. Evans was acknowledging a scroll personally handed to him on behalf of the Royal Veterinary College, London, by Professor Sir Frederick Hobday, the Principal and Dean of the college, where Dr. Evans qualified in 1855. The scroll, which was framed in wood from the old college, was signed by the President, the Duke of Gloucester, and Sir Frederick Hobday, and it was mentioned that it is proposed to set up in the college a carved plaque recording the fact that Dr. Evans, the father of the veterinary profession, had consented to lead the veterinarians of the Empire in support of the Royal Veterinary College Hospital giant nosebag 250,000,00 farthing endowment fund.

Dr. Evans, acknowledging the scroll, delivered an address from his bed, to which he is confined as the result of an accident. In tones which could be heard outside the house, he discoursed for half-an-hour on scientific problems affecting the veterinary profession. He mentioned that when he was in college there were no microscopes for students.

The centenarian next received the Mayor of Bangor, Alderman Richard Thomas, and the Town Clerk, Mr. Pentir Williams, who conveyed the felicitations of the citizens of Bangor, of which city Dr. Evans is a freeman.

Dr. Evans personally read every letter and telegram, of which many scores were received during the day.

BOVINE TUBERCULOSIS ERADICATION ALLOWANCES

It is with gratification that we draw our readers' attention to the announcement recently made by Earl de la Warr in the House of Lords, that the Government has decided to adopt certain suggestions put forward by the N.V.M.A., among other bodies, with a view to remedying the difficulty presented to a herd owner when the number of reactors at an initial tuberculin test is found to be more than 10 per cent. The Ministry now proposes to give to such an owner £1 1s. per annum and 2s. 6d. per head provided the whole herd is tested up to a maximum of four times, where the incidence of tuberculosis prior to the initial test does not exceed 10 per cent.

It is reasonable to assume that the average herd in England and Wales does not contain more than 20 milking cows; therefore under the new proposals, if the initial test by the owner's private veterinary surgeon discloses two reactors, the owner would be justified in disposing of those animals, availing himself of the Government's offer. Provided there is no spread of the disease, he would then be qualified to participate in the Attested Herds Scheme.

The effect on the practitioner in those counties where the whole-time staff is small and the county council does not ask its veterinary staff to undertake tuberculin testing except under the Tuberculosis Order, will be that he will be enabled to take his proper place in the work of tuberculosis eradication from the herds of the country.

In June, 1934, in a paper presented to the Annual Congress of the Royal Sanitary Institute, Captain J. R. Barker, of Hereford—the newly-elected President of the Association—put forward suggestions which were substantially those now adopted by the Government, with the exception of the very understandable omission of any reference to the question of the amount of the subsidy—for such, in essence, the proposed payment is. It is significant, too, that at a comparatively recent date, proposals on these lines were put to the Minister by the Association's members of the influential delegation which waited upon him, representative of the many and varied interests concerned in the vital question of improving the health standard of the milk supply of the country. The N.V.M.A. delegates were asked where the money for financing these proposals was to be found, and their answer—which evidently made an impression as being well founded—was that the surplus from the grant already made for the Attested Herds Scheme would amply cover the new charges in the first twelve months. Here, then, is a project the putting into operation of which will considerably widen the practitioner's sphere of activity in this connection and will materially help to increase the number of farms declared tuberculosis-free—the purpose of the campaign decided upon by the Minister in accordance with the recommendations of the Gowland Hopkins Report.

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PERSONAL

Birth.—Ritchie. At 15, Glenisla Gardens, Edinburgh, on July 14th, 1935, to Mr. and Mrs. J. N. Ritchie, a daughter.

Honorary Veterinary Surgeons to the King.—Members of the profession holding this appointment have been notified that His Majesty is graciously pleased to grant them the privilege of wearing the Fourth Class of the Household Civil Uniform.

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R.C.V.S. OBITUARY

Little, Edwin, Alston, Cumberland. Graduated London, December 13th, 1899; died July 3rd, 1935, aged 60 years.

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THE HORSE IN TRAFFIC

"Who is this Mussolini who decides the destiny of the horse by such a shibboleth as 'The horse must go?'" writes Mr. Gladstone Mayall in *The Daily Dispatch*.

"Such a statement as 'the Minister of Transport has had to tackle the problem of the horse' is not true. . . . Reasonable men will not be convinced of the necessity for doing away with the horse by such general statements as 'traffic stagnation caused by horse-drawn vehicles costs thousands of pounds a year.' What is the proof of this?"

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OUTBREAK OF ANTHRAX IN DEVON

Outbreaks of anthrax in the Modbury district have been confirmed by the authorities during the past few days.

One infected carcase was traced to the kennels of Modbury Harriers, where a number of healthy young dogs are being trained for the coming season, and as a consequence quantities of feeding stuffs have been destroyed, and the kennels thoroughly disinfected. The outbreak has affected two farms, and a suspected case has occurred on a third. All are mixed farms, and practically adjacent.

The police have limited the movement of other animals which have been exposed to the possibility of infection, but the restrictions do not concern any but the affected farms. All were visited by an official of the Ministry of Agriculture.

Local markets, it was stated recently, will not be affected.

Modbury experienced a particularly severe outbreak of the disease in 1921. Many of the farms in the parish were involved and a large number of animals was destroyed.

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FILMS IN EDUCATION

In a letter published, under the above heading, in a recent issue of *The Daily Telegraph*, Sir Frederick Hobday says: "The Education Committee of the London County Council have recently discussed the proposal to use the film as an aid to education. As one who has for some years adopted this method I should like to add my testimony to its value.

"In the Royal Veterinary College we have the most complete and original film library of its kind in the world; and it is of the utmost value

to be able to depict not only operations in detail, but also the appearance and behaviour of sick horses, cattle, dogs, and even birds.

"It is of exceptional advantage from a teaching point of view to be able to demonstrate these things during the delivery of lectures on the respective subjects, and it makes for originality in composition if the student is told to write down his (or her—for we have now many women veterinary students) impression as conveyed by the film.

"From some nine years' regular experience of its use I cannot speak too highly of the film 'as an aid to education.' Moreover, my students never go to sleep during lectures!"

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A POCKET MEDICAL DICTIONARY

This small dictionary* is published for medical students especially during their first two or three years of study and it contains most of the common terms and definitions, although making no claim to the completeness of the larger medical dictionaries. There are, in addition, useful appendices dealing with nutrition, poisons, and brief notes concerning urine, fæces and blood examinations. For the price it is a useful book for the purpose for which it was compiled.

* Compiled by Lois Oakes, S.R.N., D.N. (London and Leeds) assisted by Thos. B. Davie, B.A., M.D. (Liverpool), M.R.C.P. (London). Second Edition. E. S. Livingstone, Edinburgh. Price 3s.

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BROADCAST FOR THE ROYAL VETERINARY COLLEGE

Our readers will doubtless be glad to make a special point of "listening-in" at 8.45 p.m. on Sunday next—the time allotted to "The Week's Good Cause"—when Sir Frederick Hobday will broadcast on behalf of the Beaumont Animal Hospital (Poor Out-Patients' Department of the Royal Veterinary College).

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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THE FUTURE OF THE HORSE

To the Editor of The Veterinary Record

Sir,—I am glad to see the excellent "leader" in your issue of August 3rd, calling attention to the threat of the Minister of Transport to put a ban on horse-drawn traffic on certain streets of the Metropolis and probably in other cities and towns at a later date.

All motorists must know that the delay and congestion caused by the horse is negligible when compared to that due to heavy motor transport with trailers, with the possible exception of one-way traffic when a road is up for repairs.

It is to be hoped that our profession will stand together as one man to fight to the last any such unjust restrictions as are proposed. It is surely a happy augury for this that we have in our newly-elected President of the R.C.V.S. a man whose life has been dedicated so largely to the interests and betterment of the heavy horse.

Yours faithfully,

Wakefield. D. S. Rabagliati.

August 5th, 1935.

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HUSK IN ADULT CATTLE

To the Editor of the Veterinary Record

Sir,—During the last twelve months I have come into contact with outbreaks of husk or hoose affecting adult cattle. In two outbreaks in dairy herds the position was extremely serious, a number of valuable animals being lost to the ravages of parasitic broncho-pneumonia.

Husk as affecting calves is commonly recognised, but husk of adults is not anticipated in the farmer's scheme and so the preliminary warnings are neglected and in due course the whole herd is affected with parasitic broncho-pneumonia. Many veterinary friends have told me that they have never met with husk in milking cows, and indeed the literature on the subject seems to be negligible or unobtainable by the average person.

My experience has led me to make inquiries and I find that the trouble has been quite widespread during the last two years.

Here is a useful field for veterinary research, or at any rate an opening for one of our parasitologists to place before the profession the present-day knowledge as to prevention and treatment—for, other than intratracheal injections and hygienic measures, I am sorry to say that I had to rely largely on my old friend "Nature."

Yours faithfully,

J. McCunn.

Royal Veterinary College,
Camden Town, N.W.1.
August 6th, 1935.

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"INDEX VETERINARIUS"

To the Editor of the Veterinary Record

Sir,—Two complete volumes of *Index Veterinarius* have been published and the first number of Volume 3 has just been issued. It would appear to be worth while now to invite the help of those who use the *Index* in order to ascertain whether its usefulness can be increased.

The text has been laid out in a form in which it is hoped that the references can easily be traced. This has involved the adoption of certain nomenclature and systems of classification that may not be used or followed by some readers, though it is believed that the information required is easily found.

Subjects on which, among others, the views of readers would be welcomed are:—

System of classification.
Nomenclature.
Subjects and interests covered.
Additions to or cancellations of publications indexed.
Layout.

I would be glad to receive the opinions of readers on the above points and their views regarding any other improvements that might be introduced.

Yours faithfully,

W. A. Pool,
Editor, Index Veterinarius.

Imperial Bureau of Animal Health,
Veterinary Laboratory,
Ministry of Agriculture and Fisheries,
Weybridge, Surrey.